Can the Farmer Buy?—Page 1029

THE IRON TRADE REVIEW

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CLEVELAND, APRIL 13, 1922

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TRUSCON FOUNDRY FLASKS

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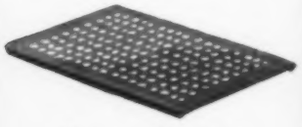
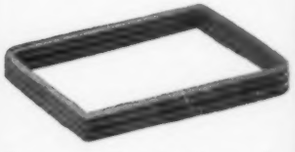


Core Plates



Snap Flask Bands

Pouring Jackets

TRUSCON STEEL CO.
TRUSCON
PRESSED STEEL

ASK FOR QUOTATIONS
TRUSCON STEEL CO.
YOUNGSTOWN, O.
WAREHOUSES AND SALES OFFICES
IN PRINCIPAL CITIES

Truscon Steel Platforms for Lift Trucks

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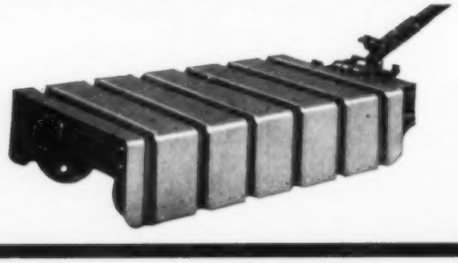

A Size for any Type of Lift Truck

APR 17 1922
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Vol. LXX THE IRON TRADE REVIEW No. 15
Registered U. S. Patent Office
Cleveland, April 13, 1922

Industry Awaits Strike Effects

More Concern Felt Over Coke Supplies as Many Mines and Ovens in Nonunion Connellsville Field Suspend—Some Blast Furnaces Banked, Others Kept Idle—Sellers Book Cautiously—Many Price Advances

POSSIBILITIES of interrupted operations have been brought before the iron and steel industry in a positively threatening manner by the spread of the coal strike among the nonunion miners of the Connellsville regions upon which so many of the blast furnaces are dependent for continuing fuel supplies. The dislocation of production in that territory, it is freely admitted by the operators, is much more serious than had been anticipated. In some sections only a small fraction of normal output is being obtained.

Curtailment of iron and steel production, as yet, has been slight owing to stocks of coal in hand and the industry remains 70 to 75 per cent engaged. Some furnaces at Pittsburgh, in the valleys and elsewhere have been forced to bank this week and others which were scheduled to resume have been held idle. The chief effect in fact has been to check temporarily at least the expansion of production which had been going forward vigorously in recent weeks and to cast doubt upon increased activities in the near future. A continuance of present conditions for 30 days, undoubtedly, would be attended by a serious upsetting of iron and steel operations. The Carnegie Steel Co. which was slated to run 90 per cent this week is keeping to around 82 per cent.

Coke Not Excited

Notwithstanding the disturbed outlook, the coke market has developed no pyrotechnics. Prices are up probably 50 cents per ton on spot fuel but there is no disposition on the part of buyers to bid up extravagant levels for the limited supplies offering. Rather they are inclined to limit their operations and await developments. The Carnegie Steel Co. was a buyer of coke in the open market this week.

Steel prices have reflected the prevailing uncertainty and are stronger all around. Some of the mills have withdrawn entirely from the market; others are quoting very cautiously and then for delivery subject to their convenience. Independent makers have advanced wire products, excepting plain wire $2 a ton. All sheet mills now are on a $3 per ton higher basis. The Inland Steel Co. this week again advanced plates, shapes and bars.

Iron Prices Jump

Pig iron prices in most districts have jumped 50 cents to $1 a ton under the stimulus of heavy buying plus a conservative attitude of producers in committing themselves under present uncertainties respecting coke deliveries. A 5000-ton sale of basic was made at $19.50 valley basis and this followed sales of 10,000 to 15,000 tons at $19 Cleveland furnace. Valley No. 2 is at $19.50, Buffalo No. 2X at $19.50 and Southern Ohio at $19.50. Southern iron is firmer around $16 Birmingham, and one sale of about 1000 tons at $16.50 is reported. Sales are heavy in total. Sellers in the Cleveland district booked 75,000 to 100,000 tons in the week and in New York territory practically as much. The American Radiator Co. bought an additional 10,000 tons this week.

Due to the sharper upward tendency of prices THE IRON TRADE REVIEW composite market average this week records another pronounced rise. The composite this week is $34.02 compared with $33.45 last week, and the low point of $32.80 March 22.

Structural activity is keeping up to a high pitch, the week's awards totaling 32,000 tons and bringing the reported lettings of the past four weeks to around 160,000 tons. The Burlington railroad placed 2500 tons of bridge work and is negotiating for 5500 tons additional.

Steel Gain Large

Steel ingot production in March made the greatest forward movement since the present revival began and showed gain of approximately 750,000 tons over February and about 1,500,000 tons, or 195 per cent over the low point last July. The country at large, it is indicated, produced ingots in March at the annual rate of approximately 32,430,000 tons compared with an annual rate of 26,850,000 tons in February. The March annual rate represented 74.3 per cent of the high record output of the country in 1917.

Business Trend and Chart Section Page 1029

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Giving Business a Real Chance

FORMAL effort to bring some order out of the confusion that now surrounds the scope of the legitimate activities of trade associations in view of the recent decision of the United States Supreme Court in the hardwood lumber case, is being taken at Washington this week. Secretary Hoover whose sympathy with the purposes and functions of organizations of business endeavoring to render a sincere and enlightened economic service to their fields, has been fully demonstrated, is sponsoring this gathering of trade association executives.

Simultaneously with the arrangements for the conference of trade association executives has come the introduction into the senate and house of a bill calculated to offer definite means to such organizations to act in teamwork with the government. Under this proposal the federal trade commission is the suggested instrument through which the trade bodies may establish a continuing contact with the government as they carry on their functions and also determine the propriety of their acts and intentions under the law by obtaining rulings in advance. Secretary Hoover long has favored rulings in advance by the federal trade commission. Such a plan of interpretative administration by the commission would enable industry largely to set up its own code of practices.

Some of the things now proposed to the trade associations in the way of closer federal contact at first may not appear practicable or advisable in view of the experiences of the past. Nevertheless it is apparent that the present administration is making a sincere effort to co-operate with business in concrete fashion for the true benefit of the latter. If the trade associations and business in general do not show a spirit of willingness to grasp the extended hand of the government, they will be doing so to their own disadvantage. A real opportunity has been opened to them to lend their direct influence in shaping a situation which can be made highly constructive. Not to do so now will leave them small cause for future grumbling.

Resume Rivalry for Production

JUDGING from the remarkable records being made in the production of iron and steel in a number of American plants, furnace operators have escaped—at least for a time—the retarding influences of poor coke, tardy delivery of raw materials, and other operating difficulties so prevalent during the past few years. Several so-called 600-ton blast furnaces have regularly been making over 700 gross tons of iron daily, and at least one stack has reported an output of 845.6 gross tons in a 24-hour period.

Steelmakers also have been exceeding old records. In one plant, an open-hearth furnace with a previous high record of 6344 tons of basic steel in 31 days, has produced 9111 tons in a similar period. A comparatively new steelworks, with seven 100-ton open hearths, produced 49,118 gross tons of ingots in March, or an average of 7017 tons per furnace. In another plant, five open hearths are said to be exceeding previous outputs by from 20 to 25 per cent.

While it may be true that these examples of unusual furnace performance are due in some measure to better ore, fuel, scrap, etc., and to uninterrupted supplies of these materials, still it is probable that the greatest factor is improved furnace practice. Blast furnace men gained valuable experience in the trying days of 1918, 1919 and 1920, and now that operating conditions are favorable, they are profiting from it. Blast furnace equipment is more efficient than heretofore, and this contributes to the better results now obtained.

An improved method of introducing gas and air to the furnace is responsible for much of the increase in output reported by several open-hearth operators. However, remarkable gains in production have been

made in furnaces equipped with ports of conventional design. In these instances, the improved results must be attributed to more intelligent furnace operation, and to the opportunity presented for better selection of scrap, closer furnace control, and high labor efficiency.

New records doubtless will be reported frequently, and as long as quality is not sacrificed for quantity, iron and steelmakers should be encouraged in their rivalry for production.

Bessemer Rail Market Fades

BESSEMER rail production in 1921 came near the vanishing point and was the smallest in history by a considerable margin. The output as shown by the statistics of the American Iron and Steel institute was only 55,559 tons. This compares with the previous low record of 142,889 tons in 1920 and with the high mark of 3,791,459 tons in 1906, the biggest rail year in the country's history. The drop in the past 17 years between the high and low points accordingly has been 3,735,900 tons, representing a tremendous shrinkage of demand. In the same period the production of open-hearth rails has grown from 186,413 tons to 2,027,215 tons in 1921. The latter, however, was not the high record for open-hearth rails, this having been reached in 1920 when 2,334,222 tons of this grade was rolled.

The decline of the bessemer rail market has been practically uninterrupted since the peak was touched in 1906. The only exceptions were the war years of 1916, 1917 and 1918 when there was a moderate increase due to the fact that foreign buyers, particularly Russia, then a heavy purchaser, were willing to accept this grade. At that time, every effort was being made to conserve open-hearth steel for shells and other munitions.

Most of the bessemer rails rolled in the country in 1921 apparently were for export but even in the international markets the demand for this grade is becoming less and less. The falling off in bessemer rail output from 142,899 tons in 1920 to 55,559 tons in 1921 was disproportionate to the drop in total rail exports from 594,628 in 1920 to 322,107 in 1921. Domestic consumption of rails in 1921 showed little change over 1920.

Ore Analyses Show Prices

WITH the average analyses of the various grades shipped from the district definitely known, it is possible to indicate the prices actually paid for Lake Superior iron ore in 1921. The average price paid for Mesabi nonbessemer ore delivered at lower lake ports in 1921 was $5.48. The rail and vessel freight charges amounted to $1.94, leaving the producer $3.54 per ton for his ore at the mine. He received $2.20 per ton in 1916. For Mesabi bessemer ore, the average price delivered at lower lake ports last year was $6.15. The mine price was $4.11. In 1916 it was $2.90.

Old range producers of bessemer ore in 1921 received an average price of $6.43 for the ore delivered at lower lake ports as compared with $4.47 in 1916. For old range nonbessemer ore the average delivered price for 1921 was $5.83, compared with $3.83 in 1916. The freight rates from the old range vary.

The analyses of the ore for 1921 as presented in this issue of THE IRON TRADE REVIEW show that the producers in general are receiving less for the ore they ship than the prices quoted on the two base grades, bessemer and low phosphorus nonbessemer. The significance of this is that while prices are made up on the cost of mining a ton of ore of a certain fixed standard, the average ore actually mined is inferior to that standard.

A reduction of $1 per ton on ore this year would bring the price delivered at lake ports within close proximity to that established at the beginning of 1916. THE IRON TRADE REVIEW'S composite market average of 14 iron and steel products is substantially the same as it was in February, 1916. Liquidation in the ore trade then would be keeping in reasonable relationship to that in the entire iron and steel industry.

Charts That Speak

Readers Point To Clarity of Business Trend Section In Conveying Basic Facts

WE CONGRATULATE you on your progressiveness and the timely appearance of your Business Trend Section in THE IRON TRADE REVIEW. This intensely practical service, in the writer's judgment, will prove to be one of the best features of your already splendid paper. More power to THE IRON TRADE REVIEW—which we consider indispensable among the papers that we receive.—*Industrial Works, Bay City, Mich., A. J. Copeland, purchasing agent.*

The subjects are well selected and excellently presented. There is none of the abuse in presentation to which charts so easily lend themselves, and you have guarded well against trying to show so much on one chart that its usefulness is destroyed. On the whole you have made a useful addition to your magazine which deserves well of your readers.—*Stanley Works, New Britain, Conn., E. A. Moore, president.*

We cannot put away the Feb. 23 issue, of THE IRON TRADE REVIEW without first expressing our appreciation of the Business Trend section which began on page 525. This was most interesting to the writer and we hope you will continue furnishing this section from month to month.—*Oliver Machinery Co., Grand Rapids, Mich., R. F. Baldwin, treasurer.*

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products, Yesterday, One Week, One Month, Three Months, One Year and Nine Years Ago

April 12, 1922	April 5, 1922	March, 1922	January, 1922	April, 1921	April, 1913
$34.02	$33.45	$32.97	$33.35	$43.84	$27.74

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Composite Market Record for Nine Years on Page 1076

SCRAP PRICES, PAGE 1078, WAREHOUSE, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 1074

Iron and Steel Prices

Pig Iron

Bessemer, valley	$19.50 to 20.00
Bessemer, Pittsburgh	21.46 to 21.96
Basic valley	19.00 to 19.50
Basic, Pittsburgh	20.96 to 21.46
Basic, Buffalo	18.50 to 18.75
Basic, delivered, eastern Pa.	20.00 to 20.25
Malleable, valley	19.50 to 20.00
Malleable, Pittsburgh	21.46 to 21.96
Malleable, Chicago	20.00
Malleable, Buffalo, furnace	18.75 to 19.50
Malleable, del., eastern Pa.	22.00 to 23.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	23.00 to 23.24
No. 1X, Buffalo	20.25 to 21.50
No. 2 foundry, valley	19.50 to 20.00
No. 2 foundry, Pittsburgh	21.46 to 21.96
No. 2 foundry, Buffalo	18.75 to 19.50
No. 2 foundry, Chicago	20.00
No. 2 foundry, Ironton furnace	19.50 to 20.00
No. 2 foundry, Cleveland del.	20.00 to 20.50
No. 2 foundry, del. Phila.	21.50 to 21.84
No. 2 foundry, N. J. Tidewater	22.04 to 22.96
No. 2X, eastern del. Phil.	22.00 to 22.34
No. 2X, east. N. J. Tidewater	22.54 to 23.46
No. 2X, eastern del. Boston	24.06 to 24.56
No. 2X, foundry, Buffalo fur.	19.50 to 20.00
No. 2X, Buffalo del. Boston	23.96 to 24.96
No. 2 southern, Birmingham	15.50 to 16.00
No. 2 southern, Cincinnati	20.00 to 20.50
No. 2 southern, Chicago	22.16 to 22.56
No. 2 southern, Philadelphia	24.16 to 24.56
No. 2 southern, Cleveland	22.16 to 22.66
No. 2 southern, Boston	26.66 to 27.16
No. 2 southern, St. Louis	19.94 to 21.72
No. 2X, Virginia furnace	22.50
No. 2X, Virginia Phila.	28.24
No. 2X, Virginia Jersey City	28.66
No. 2X, Virginia Boston	28.58 to 29.08
Gray forge, eastern Pa.	20.00 to 21.00
Gray forge, val. del. Pitts.	21.46
Low phos., standard, valley	30.00 to 31.00
Low phos., standard, Phila.	34.00 to 35.32
Low phos., Lebanon furnace	28.00
Charcoal, Birmingham	32.00 to 35.00
Charcoal, Superior, Chicago	26.00 to 29.00

Silvery Iron
8 per cent base

Jackson county, O., furnace	27.50
Tennessee, Chicago delivery	Nominal
Ohio brands, Chicago	32.82

Bessemer Ferrosilicon
Jackson County, Ohio, furnace

10 per cent	$36.50
11 per cent	39.80
12 per cent	43.10
13 per cent	47.10
14 per cent	52.10

Ferroalloys

Ferromanganese, domestic 80 per cent, Pittsburgh	$67.82 to 75.32
Ferromanganese, 80 per cent, English, c.i.f. Atlantic port	62.50 to 70.00
Spiegel, 18 to 22 per cent furnace spot, nominal	27.50 to 30.00
Ferrosilicon, 50 per cent, contract delivered	55.00 to 57.00
Ferrotungsten, standard, per pound, contained	35.00 to 40.00
Ferrochrome, 60 to 70 chromium, 4 to 6 carbon, per pound contained, makers plant	12.00c to 13.00c
Imported ferrochrome, 4 to 6 per cent carbon	11.00c to 12.00c
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.75 to $4.00
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Coke

Beehive, Ovens

Connellsville furnace	$3.75 to 4.25
Connellsville foundry	4.50 to 5.00
Pocahontas furnace	5.00 to 6.00
Pocahontas foundry	6.00 to 7.00
New River furnace	6.50 to 7.50
New River foundry	7.25 to 7.50
Wise county furnace	4.25 to 4.50
Wise county foundry	5.50 to 5.75
Alabama furnace	4.00 to 5.00
Alabama foundry	5.00 to 5.25
Alabama pitch coke	8.00

By-Product

Foundry, Newark, N. J., del.	$8.84
Foundry, Chicago, ovens	11.25
Foundry, Boston, delivered	10.15
Foundry, Granite City, Ill., ovens	9.00

Semifinished Material

BILLETS AND BLOOMS
(4 x 4-inch)

Open-hearth, Pittsburgh	$29.50
Open-hearth, Youngstown	29.50
Open-hearth, Philadelphia	35.24
Bessemer, Pittsburgh	29.50
Bessemer, Youngstown	29.50
Forging, Philadelphia	40.24
Forging, Pittsburgh	34.00 to 37.00

SHEET BARS

Open-hearth, Pittsburgh	$31.00
Open-hearth, Youngstown	31.00
Bessemer, Pittsburgh	31.00
Bessemer, Youngstown	31.00

SLABS

Pittsburgh and Youngstown	$29.50 to 30.50

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$38.00
Grooved skelp, Pittsburgh	1.50c
Universal skelp, Pittsburgh	1.50c
Sheared skelp, Pittsburgh	1.50c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	1.50c
Structural shapes, Phila.	1.86c
Structural shapes, New York	1.88c
Structural shapes, Chicago	1.60c
Tank plates, Pittsburgh	1.50c
Tank plates, Philadelphia	1.86c
Tank plates, New York	1.88c
Tank plates, Chicago	1.60c
Bars, soft steel, Pittsburgh	1.50c
Bars, soft steel, Phila.	1.86c
Bars, soft steel, New York	1.88c
Bars, soft steel, Chicago	1.60c
Bars, hard steel, Chicago	1.50c
Reinforcing bars, Pittsburgh	1.50c
Bar iron, common, Phila.	1.86c
Bar iron, common, N. Y.	1.88c
Bar iron, common, Chicago	1.60c

Hoops, Bands, Shafting

Hoops, Pittsburgh	1.90c to 2.00c
Bands, Pittsburgh	1.70c to 2.00c
Cold finished steel bars, Pittsburgh base	1.80c to 1.90c

Rails, Track Material

Standard bessemer rails, mill	$40.00
Standard open-hearth rails, mill	40.00
Relaying rails, St. Louis	24.00 to 28.00
Relaying rails, Pittsburgh	25.00 to 27.00
Light rails, 25 to 45, mill	1.45c
Angle bars, Chicago base	2.40c
Spikes, railroad, Pittsburgh	2.25c
Spikes, small and boat	2.50c
Spikes, railroad, Chicago	2.48c
Track bolts, Pittsburgh	3.00c
Track bolts, Chicago	3.48c
Tie plates, Pittsburgh	1.65c to 1.90c
Tie plates, Chicago	1.75c to 2.00c

Wire Products

100 lbs. to Jobbers in Carloads

Wire nails, Pittsburgh	2.40c to 2.50c
Plain wire, Pittsburgh	2.25c
Galvanized wire, Pittsburgh	2.75c
Barbed wire, painted, Pitts.	2.50c to 2.65c
Barbed wire, galv., Pittsburgh	3.05c to 3.15c
Polished staples, Pittsburgh	2.55c to 2.65c
Galvanized staples, Pittsburgh	3.05c to 3.15c
C't'd nails, per count keg, Pitts.	1.90c to 2.00c

Chain, Piling, Strip Steel

Chain, 1 in. proof coil, Pitts.	5.50c
Sheet piling base, Pittsburgh	1.55c
Hot rolled strip steel, Pittsburgh stamping quality	1.90c to 2.00c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base	3.65c

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pittsburgh	3.15c
No. 28, bessemer, Pittsburgh	3.15c
No. 28, open-hearth, Phil.	3.51c
No. 28, open-hearth, Chicago	3.53c

TIN MILL BLACK

No. 28, open-hearth, Pittsburgh	3.15c
No. 28, open-hearth, Chicago	3.38c

GALVANIZED

No. 28, open-hearth, Pittsburgh	4.15c
No. 28, bessemer, Pittsburgh	4.15c
No. 28, open-hearth, Phila.	4.51c
No. 28, open-hearth, Chicago	4.53c

BLUE ANNEALED

No. 10, open-hearth, Pittsburgh	2.40c
No. 19, bessemer, Pittsburgh	2.40c
No. 10, open-hearth, Phil.	2.76c
No. 10, open-hearth, Chicago	2.78c

Tin Plate

Per 100 lb. box.

Tin plate, coke base, Pitts.	$4.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	71	58½
1 to 1½-inch, butt iron	44½	29½

Boiler Tubes

Carload Discount 4 Points Larger

Steel, 3¼ to 13 inches, l. c. l.	53 off
Charcoal iron, 3½ to 4½ inches, l. c. l.	28 off
Seamless, 3¼ to 5-inch, l. c. l.	43 off

Cast Iron Water Pipe

Without War Freight Tax
Class B Pipe

Four-inch, Chicago	$48.10 to 48.60
Six-inch and over, Chicago	44.10
Four-inch, New York	51.80
Six-inch and over, New York	48.80 to 49.80
Four-inch, Birmingham	38.50
Six-inch and over, Birmingham	34.50
Three-inch, Birmingham	44.50

Class A pipe is $4 higher than Class B. Standard fittings, Birmingham, base, $100.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Prices Present and Past

Representative market figures yesterday, one month ago, three months ago and one year ago

	Apr. 12, 1922	March 1922	Jan. 1922	April 1921
PIG IRON				
Bessemer, valley, del., Pittsburgh	$21.46	$21.21	$21.51	$27.46
Basic, valley, del., Pitts.....	21.46	19.86	20.31	24.86
No. 2 foundry, del. Pitts.	21.46	20.96	21.81	26.86
No. 2 foundry, Chicago.....	20.00	20.00	19.00	24.25
Lake Superior charcoal, Chicago.	26.00	26.90	31.50	38.50
Malleable, valley	19.00	19.00	19.55	25.00
Malleable, Chicago	20.00	20.00	19.00	24.75
*Southern No. 2, Bir.	16.00	15.25	16.15	23.00
*Southern Ohio No. 2 Ironton.	19.50	19.00	19.65	25.85
Basic eastern del., eastern Pa..	20.00	19.50	20.25	25.00
**No. 2X, Virginia furnace....	22.50	22.50	21.75	27.10
**No. 2X, eastern del. Phil...	22.00	21.24	21.55	26.25
Gray forge val. del. Pitts.....	21.46	20.96	21.06	25.86
Ferromanganese, del., Pitts....	75.32	67.82	61.90	87.50
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pittsburgh	31.00	29.40	30.00	38.75
Sheet bars, open hearth, Pitts....	31.00	29.40	30.00	38.75
Billets, bessemer, Pittsburgh....	29.50	28.30	29.00	37.75
Billets, open-hearth, Pittsburgh..	29.50	28.30	29.00	37.75
FINISHED MATERIAL—				
Steel bars, Pittsburgh	1.50	1.45	1.50	2.10
Steel bars, Chicago.....	1.60	1.56	1.60	2.46
Steel bars, Philadelphia	1.86	1.76	1.86	2.40

*1.75 to 2.25 silicon

	Apr. 12, 1922	March 1922	Jan. 1922	April 1921
FINISHED MATERIAL Continued				
Iron bars, Philadelphia	$1.86	$1.76	$1.86	$2.35
Iron bars, Chicago mill.....	1.60	1.58	1.61	2.48
Beams, Pittsburgh	1.50	1.45	1.50	2.15
Beams, Philadelphia	1.86	1.76	1.81	2.45
Beams, Chicago	1.60	1.58	1.63	2.53
Tank plates, Pittsburgh	1.50	1.45	1.50	2.15
Tank plates, Chicago.....	1.60	1.58	1.60	2.53
Tank plates, Philadelphia	1.86	1.76	1.81	2.45
Sheets, blk., No. 28, Pitts....	3.15	3.00	3.00	3.90
Sheets, blue anl., No. 10, Pitts.	2.40	2.25	2.25	2.95
Sheets, galv., No. 28, Pitts. ...	4.15	4.00	4.00	4.90
Wire nails, Pittsburgh.....	2.40	2.40	2.50	3.20
COKE—				
Connellsville furnace, ovens ..	3.75	3.25	2.75	3.60
Connellsville foundry, ovens ..	4.50	4.05	3.85	5.00
OLD MATERIAL—				
Heavy melting steel, Pitts. ..	16.50	14.95	14.50	13.00
Heavy melting steel, eastern Pa.	14.00	13.15	11.75	11.75
Heavy melting steel, Chicago..	13.25	12.05	11.20	11.25
No. 1 wrought, eastern Pa....	15.75	15.60	15.50	15.60
No. 1 wrought, Chicago	13.00	12.25	11.80	12.05
Rerolling rails, Chicago	14.00	12.85	12.50	12.70

**2.25 to 2.75 silicon

Coal Strike Lifts Iron Market

Prices Up 50 Cents to $1 Due to Increased Demand and Apprehension of Furnaces Over Fuel Supplies—Basic Sells at $19.50 Valley Basis—Chicago Buyers Take Last Half Iron—Various Sellers Withdraw

Philadelphia, April 11.—Eastern Pennsylvania furnaces added fully 25,000 tons to their order books in the past week and now all except one are out of the market due to fears of a coke shortage. Coke shipments have been reduced in some cases to a volume insufficient to maintain full production. All furnaces now have big order books, in one or two cases enough to take up production to July 1. A Harrisburg consumer bought 2500 tons of basic. One furnace is taking 1500 tons and another 2600, both at $20 furnace for No. 2 plain, while a New York state furnace took 2000 tons at a lower figure. These prices had been outstanding. The market now is $21 furnace for No. 2 plain and $22.50 for No. 2X and No. IX, although up to today $20.50 still could be done. The current asking price on basic is $20 furnace. Several thousand tons of Alabama iron have been sold in the past week to Virginia consumers. From 500 to 1000 tons of copper-bearing low phosphorus was sold last week at $28 furnace subject to equalization. Several good sized inquiries are out, mostly from the West. Some small operators again are looking into use of anthracite coal in furnaces but the price of $7.50 per ton discourages any hope from this quarter.

Cover For Last Half

Chicago, April 11.—Increased buying of pig iron and great strength in prices are features of the present situation. Smelters are inquiring for iron and covering third quarter and last half requirements at $20 furnace. Second quarter buying is heavy and the price is held firmly. The fact that careful buyers are now covering ahead indicates their faith in the future. Third quarter sales include one of 2000 to 5000 tons, mostly foundry and malleable. The second Iroquois stack has been blown in, and the third is likely to be started late in April. Inquiry includes 500 and 300-ton lots of foundry iron for Milwaukee melters, aggregating 1500 tons of malleable. A Milwaukee melter has bought 250 tons of foundry. Southern iron is quoted $16 to $16.50 Birmingham, too high to compete here. One sale of malleable, figuring at $19.75, Chicago, proves to be off-grade. A sale of 500 tons of low phosphorus iron to a Chicago user is reported. An inquiry for 200 to 300 tons of the same grade is being made by a Milwaukee user. All makers are quoting charcoal iron at $22.50, furnace, equivalent to $26 Chicago. The market for silveries is quiet and unchanged. Northern iron is strong enough to advance shortly.

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Strike Influence Lifts Market

Pittsburgh, April 11.—By some pig iron producers the coal strike is looked upon as an influence for good, bringing about prices which are a step or two nearer production costs. Higher levels by 50 cents per ton prevail as against a week ago. This is directly traceable to coal strike influences since production is being greatly curtailed through the banking of furnaces. Makers are not seeking tonnage. While on one or two round tonnage inquiries for basic, $19.50 valley now is being quoted, it is understood that this figure is being named because the seller does not care whether it books the tonnage or not although it is freely predicted that $20 and even $21 basic iron may prevail before the end of the month. The last sale of basic in this district involved 1000 tons, brought $18.50 valley and one just prior to that involved 2000 tons made by an Ohio producer at $18.40 valley. The com-

mon quotation now is $19, valley, $18.50 offers having since been rejected here.

For the time being, the market on basic is quoted from $18.50 to $19 valley. Several inquiries are current including one from the N. & G. Taylor Co. for 3600 tons to be shipped at the rate of 1200 tons monthly from May 1. A sale of 500 or 1000 tons of bessemer at $19.50 valley is noted and that figure as well as $20 valley are being quoted the Mesta Machine Co. on 1000 tons. The bessemer therefore can be quoted at $19.50 to $20 valley. The same spread applies to malleable, a few sales being noted at the minimum and several quotations at the $20 level now are out on lots of 200 to 500 tons each. All outstanding $19 and $19.25 quotations have been withdrawn on malleable as well as No. 2 foundry iron. The minimum of the market on the No. 2 grade (1.75 to 2.25 silicon) now is $19.50, with some producers quoting up as high as $20, valley, although no sales are noted at the maximum figure. Gray forge likewise is up 50 cents per ton to a $19.50 valley level

Heavy Buying, Prices Higher

New York, April 11.—Excited buying characterized the pig iron market in this district during the past week. A great number of consumers participated and orders aggregated in excess of 75,000 tons. Practically all of this was foundry iron, although included were some miscellaneous tonnages of malleable, gray forge and bessemer. Current inquiries call for approximately 3000 tons, but it is expected that a big business will be done this week, in view of the anxiety among consumers as to the possible effect of the coal strike on iron production. So far, no furnaces have been retired, but in view of conditions in the coal fields, iron producers believe it likely that coke shipments are going to be cut off to some extent. A number of furnaces in the eastern and central Pennsylvania and the Buffalo districts have withdrawn from the market. All eastern Pennsylvania furnaces except one have advanced another 50 cents. The present level is $20.50 to $21 furnace for 1.75 to 2.25 silicon, $21 to $21.50, for 2.25 to 2.75 and $22 to $2.50 for 2.75 to 3.25. Most of the Buffalo iron sold was on the basis of $19 to $19.50 furnace. All central Pennsylvania makers have withdrawn after having sold round tonnages at $20.50 and $21 base furnace, a $1 advance. Moderate tonnage of copper-bearing low phosphorus iron has been sold at $28, some malleable at $20.50 to $21, furnace and some bessemer at $21 all eastern Pennsylvania furnace.

Awards have been made by the Davies & Thomas Co., Catasauqua, Pa., on the pig iron to be required for making 48,000 tons of cast iron segments tunnel. The Bethlehem Steel Co., will supply 42,000 tons and the company 12,000 of the 15,000 tons originally placed with Empire Steel & Iron Co. It is not certain this company will furnish any. It is understood the Bethlehem Steel Co. will use pig iron almost entirely in producing the 60,000 tons of cast iron and the 9500 tons of steel segments which it is to furnish for the tunnel.

Prices Higher, Demand Strong

Cleveland, April 11.—Under the influence of the coal strike and the situation in the Connellsville coke district, pig iron prices are moving upward, and there is a strong demand for sizable tonnages. Within the past week fully 75,000 tons has been sold by the northern Ohio furnace companies. Inquiry is much larger than in recent weeks, and includes iron for the second half.

Sales of 15,000 to 20,000 tons of basic have been made by a Cleveland seller, the last lot of 5000 tons going at the equivalent of $19.50 valley. Prior to that 10,000 tons or more was sold at $19 Cleveland. Ohio and Pittsburgh district steelmakers were the purchasers. Works which have been selling basic, have need for the iron themselves and no longer are market factors. The maker which sold basic at $19 has no more to offer for the present at that price.

Prices of foundry iron also are higher, $20 furnace now being the minimum of all the northern Ohio producers which are booking business, save one taking some tonnage at $19.50, furnace. No. 2 foundry iron has gone to $20, valley. Four carloads of No. 2 foundry were sold in the Cleveland district during the week at $20, furnace. The company making this sale is asking full differentials. The Marting Iron & Steel Co. has sold iron at $20, Ironton.

An interest operating one stack is shipping more iron than it is making, and has reduced its stocks from over 100,000 tons a few weeks ago to below 90,000. Another interest with furnaces in Cleveland which planned recently to start a second stack, has postponed doing so, owing to the coke situation. A third interest which withdrew from the market a week ago has been forced to enter fairly large tonnages for some of its customers, at $20 for No. 2 foundry. A fourth producer which has been selling basic is about to start its own steelworks. The McKinney Steel Co. has banked a furnace.

Consumers in Akron, Springfield, Canton, O., and Detroit are inquiring for iron. A foundry in Terre Haute, Ind., is asking for prices on 2000 tons and one in Detroit for a similar tonnage. A consumer in Council Bluffs, Ia., is out for 4500 tons of No. 2 foundry.

Only Small Lots Available

Buffalo, April 11.—This week finds most of the Buffalo furnaces out of the market on large lots for second quarter delivery. Only one furnace is out for tonnage, though one or two of the others will sell small lots from stock. Sales preceding the retiring from the market were exceptionally heavy. One furnace which is now out sold 20,000 tons out of a total inquiry of 41,000 tons. Most of this selling was foundry iron with some scattered lots of malleable. Total sales of all furnaces in the 10 days preceding withdrawal were close to 75,000 tons. Most of the 20,000 tons sold went at $18.25 to $18.50, but the $18.50 price now has disappeared and the nearest to it is the quotation of the only maker left in the field This figure is $18.75 for No. 2 plain (1.75 to 2.25 silicon) and $19.50 for No. 2X (2.25 to 2.75 5silicon). The highest quotation being made is $20 for No. 2 plain and No. 2X and $21.50 for No. 1X (2.75 to 3.25 silicon). These prices were paid on several small lots. Numerous inquiries of 5000 tons were before the market and several of 1000, 1500 and 2000 tons. One lot of basic, 2000 tons was sold at $18.50 to $18.75. Furnaces are not quoting for third quarter. The situation developing in coke promises to be serious. Most furnaces here are supplied for the next month but after that their position will be more precarious.

The American Radiator Co. was a purchaser of another lot of 10,000 tons last week. This is in addition to the lot of 10,000 tons bought two weeks ago for northern and western plants.

Sales and Prices Strengthen

Boston, April 11.—Pig iron prices advanced sharply almost over night in New England and other eastern markets and this was the signal for a large number of melters to come into the market for current requirements. In New England sales totaled more than 20,000 tons and inquiry is still favorable. Prices in Buffalo have jumped nearly $2 during the week. The Lackawanna Steel Co. which withdrew from the market at $18.50 came in again at $19 and then went to $20 for the base grade. The Susquehanna interest advanced to $20 and then withdrew from the market as it is sold up to July 1. In eastern Pennsylvania one furnace after another is either advancing prices or withdrawing from the the market until at present the Warwick, Swede and Bethlehem furnaces are the only three actively selling in New England. Prices in eastern Pennsylvania for small tonnages are $20.50 furnace for the base grade; $21. for No. 2X (2.25 to 2.75 silicon) and $22 for No. 1X (2.75 to 3.25 silicon). Sales in New England include approximately 8000 tons to the H. B. Smith Co., Westfield, Mass., 2000 tons to a Massachusetts textile interest; 600 tons to another Massachusetts melter; 400 tons to still another; 300 tons to a Rhode Island consumer and scattered lots of from 100 to 300 tons in Maine, New Hampshire, Connecticut and Massachusetts.

St. Louis Market Active

St. Louis, April 10.—The pig iron market continues active, with excellent inquiry and large bookings. Two current inquiries are for round tonnages for delivery during the fourth quarter. One of these is from a nearby melter, who specifies 5000 tons. A fair business was done in high silicons and ferroalloys, stocks in this district being low. The largest single sale reported in the week is 1500 tons of basic to a local interest by the St. Louis Coke & Chemical Co. This same manufacturer sold 400 tons to a car builder in the district, and smaller lots aggregating close to 1000 tons. Southern representatives sold about 1800 tons in lots ranging from 50 to 250 tons. Among the inquiries are 2000 tons of basic for an Illinois interest; 2000 tons of malleable for an Indiana melter; 300 tons for a Tennessee foundry; 400 tons for a Cin-

cinnati melter and 400 tons for a local foundry. Prices are asked on smaller tonnages for local stove, implement and architectural manufacturers. The trend of the market is decidedly firm. Another Birmingham furnace interest has gone to $16 base, and several large orders which might have been taken fractionally under that figure were refused. Northern iron holds steady at $20.

Southern Iron Is Firmer

Cincinnati, April 11.—The southern pig iron market is firm. One furnace is selling at $15.50 and is said to be quoting that price for third quarter delivery. All others are holding to $16 Birmingham base except one furnace which has announced a $16.50 base. One large maker reports 1000 tons sold at $16.50. In the southern Ohio field prices have been at $18.50 to $19, Ironton base, but the Marting interests have just announced an advance to $20, Ironton base.

Moderate buying activity and better inquiry are shown. The American Radiator Co. has inquired on 2000 tons for its north Birmingham plant, the Interstate Car Foundry at Indianapolis, Ind., is in the market for 300 tons, a Chattanooga melter wants a like tonnage and another Tennessee user is asking for 250 tons. The Louisville & Nashville railroad is in the market for another lot of 280 tons and there is a new inquiry out on 100 tons of 10 per cent silvery.

Cincinnati consumers are coming into the market after an absence of several months. The Lunkenheimer Co. has bought 100 tons of malleable for its local plant and the Peerless Foundry Co. has closed for 700 tons of southern and 500 tons of Ironton district iron. Dayton, Hamilton, Springfield and Columbus foundry melters are increasing their tonnage, approximately 2500 tons having been sold for shipment to these points during the past few days. A Toledo furnace sold 1200 tons to the Muncie Malleable Foundry, Muncie, Ind., which also took 800 tons of southern Ohio iron.

Southern Prices Stronger

Birmingham, Ala., April 10.—The pig iron market in the South continues to improve. Prices are stiffening and today are around $1 higher than a month ago. The greater amount of business now being done in this district is on a basis of $16 per ton for No. 2 foundry (1.75 to 2.25 silicon). A little tonnage is still going at $15.50. Some iron is being shipped via water through the port of Mobile to the West and shipments are being made by water out of Sheffield, on the Tennessee river into the St. Louis district. All the larger consumers of pig iron in the home territory have purchased liberally two are reported to have placed 10,000 tons each. The make per month is larger than at any time since 1920. Two companies are reported as having sold their probable output for the present month and to have business in hand for the remainder of the second quarter. Some tonnage has been booked for delivery during the third quarter of the year. Eight furnaces are producing basic iron, four foundry iron, and two charcoal iron.

Coke Shortage Spreading

Furnace Operators Unable To Obtain Supplies in Connellsville District—Carnegie Steel Co. Seeking Tonnage—Market Is Higher

COKE PRICES, PAGE 1008

Pittsburgh, April 11.—A nominal market exists in beehive coke. This has been brought about by the fact that coke production has been curtailed to an extent not originally thought possible by the strike of non-union coal miners. At present little if any coke is available, after existing obligations are taken care of. Some producers have had to shut down completely. The final contents of the coke ovens have been drawn off, the ovens sealed and the output sold at the market levels. One interest disposed of about 140 carloads last week, some going to its blast furnace connection for banking of furnaces. Coke sellers declare that $5 could be obtained if they had coke available, and they claim to have refused business offered to them this week on that basis. The blast furnace operators after a survey of the Connellsville region, finding coke supplies difficult to secure, realize they would bid up the market prohibitively if they start to fill their needs in the open market. They have blown out or banked their furnaces pending further developments. During the past week an occasional lot of five to 20 carloads has become available and these have sold all the way from $3.50 to $4.25. One small lot booked yesterday brought that minimum, another a few days ago brought $3.85, still another $4 and a fourth lot ordered this week carried a $4.25 price. The $4 sale involved coke for the banking tomorrow of the small furnace of the Shenango Furnace Co., Sharpsville, Pa. This interest will be able to maintain operations of its larger furnace at that point on by-product fuel, at least until April 30. Here and there is noted a tendency to hold small amounts of excess coke for higher levels and quotations of $5 and over are heard. These are not considered representative of the market. The Carnegie Steel Co. entered the open market for furnace coke this week and was able only to pick up a relatively small amount. The last contracts noted were booked prior to the strike and brought $3.40 and $3.50. Based on recent sales the spot market on the foundry grade is $4.50 or $5 although some sellers are holding for higher figures, whereas up to the calling of the strike $4 and $4.25 were fairly representative of the spot market. Production according to the *Connellsville Courier* for the week ended April 1 was the largest since February, 1921, with 149,960 tons produced, as against 134,410 tons in the preceding week.

Furnace Fuel is Scarce

Philadelphia, April 11.—Much foundry coke has been sold in the East the past week at $4.50, Connellsville, but numerous producers have withdrawn and most of them now are asking $4.75. Blast furnaces are suffering from the cutting off of coke shipments due to the coal strike and are alarmed by statements of coke producers that the situation will be worse. Practically no furnace coke is obtainable.

New River Ovens Closed

Cincinnati, April 11.—Little coke is moving through this market, the demand being exceedingly light. Prices are unchanged. Production in the New River field is reported practically at a standstill, one producing company having sealed up all its ovens.

Withdraw From Market

New York, April 11—While there has been no stoppage of coke shipments as a result of the coal strike, both dealers and consumers in this district are worried over the reports they are receiving from coke producers. These indicate that the situation at the ovens is becoming serious. A number of coke producers have withdrawn from the market. Restriction of the supply is indicated by the fact that a Pittsburgh merchant this morning placed an order over the long distance telephone with a merchant in New York for 15 carloads of medium sulphur, furnace coke for shipment from the Connellsville district. A fair amount of business in foundry coke has been transacted during the past week generally at $4.50, Connellsville. Operators still in the market are asking $4.75 and are talking about $5. The northern New Jersey by-product coke producer continues to ask $8.84, delivered at New Jersey points on the Pennsylvania, Lackawanna and Erie railroad and $9.15 delivered at points on the Central Railroad of New Jersey, for by-product foundry coke.

Delivery Uninterrupted

St. Louis, April 10.—In the buying movement prior to April 1 consumers of coke in this district apparently made ample provision for their needs, and the market is quiet. Tonnages from Connellsville and other eastern fields and from the South, are arriving without interruption. Some requests have been received to slow down deliveries, due to lack of storage space. Prices are steady, but the feeling is slightly easier. The coal market is also dull and featureless, with signs of weakness for certain sizes.

Coke Production Kept Up

Birmingham, Ala., April 10.—Coke production in Alabama is being kept up to requirements. Despite the announcement that there need be no apprehension so far as this state is concerned, Some coke consumers laid in stock. Prices are a little firmer though not advanced. The coal strike has not affected the Birmingham district very much. One mine shut down by reason of the strike and one was closed down a week before the strike started for other reasons. The one mine where the strike actually was felt resumed operations again before the expiration of a week. Coal production in this state is limited only by demand.

Bar Buyers Are Active

Orders Numerous and 1.50c Appears Firm Minimum—March Orders Best Since 1920—Some Mills Leave Market Pending Strike Settlement

BAR PRICES, PAGE 1008

Chicago, April 11.—March has proved the best month in soft steel bar buying since far back in 1920. This increased movement has been represented in all lines of consumption. Reports from Michigan indicate the automobile trade is now running at practically a normal rate. Agricultural implement makers are buying to fill stocks but not as much as usual. Warehouses continue to take additional tonnages, evidently expecting quotations to rise shortly. While all classes of consumers are participating in the present movement, railroads form the largest single class and in rails, cars, track fastenings and miscellaneous steel products are making their buying power felt fully. The Inland Steel Co. today announced a minimum of 1.70c Chicago mill on bars for immediate specification, but other producers are holding to 1.60c Chicago mill.

Bar iron is slightly weaker and is now quoted at 1.55c to 1.60c, Chicago mill. Demand for this product has eased considerably and producers are operating mills only part time. Hard steel bars are in some demand for reinforcing and other uses and the market appears to be about 1.50c, Chicago.

Demand Is Growing

New York, April 11.—Business in steel bars in this district during the past week was of larger proportions than in any previous week in 18 months. Actually the aggregate was larger than the total for several months of last year. The greater portion of this business involved tonnages which had been outstanding. On new business the market is firm at 1.50c, base Pittsburgh, and it is stated the main thing now is not the price but the question of getting deliveries. A feature of the current steel bar business is that it comes from more diverse sources than has been usual for a long time. An unusually good demand has come from consumers of forging bars during the past week. These are being sold on the basis of 1.75c, base Pittsburgh.

Users Increase Buying Efforts

Pittsburgh, April 11.—Numerous merchant steel bar users have been active as purchasers of late, taking advantage of protection dates to book tonnage at figures below 1.50c, base Pittsburgh. These dates largely have expired, however, and while efforts are being made to have the mills increase tonnage allotments at the lower figures, 1.50c is being obtained on the excess, and now is the quotable market. Recent orders involved tonnages up to 1000 tons each. Some mills are definitely out of the market for the time being, holding order books down to capacity to make as based upon reserve coal stocks. Until the coal strike situation is more clearly defined the tendency of bar makers will be to lean toward indifference when it comes to booking further orders.

Refined iron bar demand has been growing of late due to activity of railroad repair shops. Higher prices have not been obtained however, around 2.15c still remaining the market with 4.00c, base Pittsburgh, applying on low phosphorus melting bars.

Heavy Tonnage Going Through

Cleveland, April 11.—Orders for steel bars and related products in this territory continue heavy. Practically all lines of demand are contributing to the tonnage. Automobile and automobile parts manufacturers and nut and bolt plants are ordering in considerable amounts. Practically all quotations under 1.50c Pittsburgh now have been eliminated and the latter figure represents the current market. The mills are quoting cautiously.

Specifying Is Heavy

Philadelphia, April 11.—Steel bar makers report heavy specifications on orders on books but the volume of new business is smaller, due largely to the fact most buyers placed their requirements prior to the price advance. The 1.50c price is being firmly maintained on new business.

Cold-Drawn Requirements Grow

Pittsburgh, April 11.—Cold-drawn steel bar users are increasing individual requirements and 100 tons represents the average order. Many exceed 100 tons, some being placed this week for 300, 400, and even 500 tons each. Automotive users still are in the front rank of consumers. Prices are firming up on the basis of 1.90c, Pittsburgh, although last week some business still was being done on the 1.80c level.

Prices Are Firmer

New York, April 11.—Demand for cold finished steel has taken big leaps in this district and is several hundred per cent larger than it was a month ago. Prices are firmer and the minimum on cold rolled rounds now is 1.90c, base Pittsburgh, while in some cases 2.00c is asked.

Bolt and Nut Demand Is Larger; Prices Firm

NUT AND BOLT PRICES, PAGE 1074

Cleveland, April 11.—Makers of bolts and nuts in this district report a continued improvement of demand. Carload orders are being specified more freely. In view of the fact the coal strike is expected to have an effect on steel prices, with subsequent effect on bolt and nut quotations, many consumers are specifying for some weeks ahead. As a result, prices are very firm and one leading interest here reports prices may be raised soon.

The railroads, car repair shops and automobile makers continue to order rivets in fairly sizable quantities. Some boiler making interests are also ordering, but mostly in small quantities. The effect of the coal strike as yet has not been felt by rivet interests. Prices are holding and practically no shading is reported.

Buyers Resist New Schedule

Chicago, April 11.—Buyers of bolts and nuts are seeking to prevent new discounts from going into effect and are holding off on inquiry and buying. Apparently in a effort to force shading by producers. The market is fairly active and users of bolts and nuts are in need of large quantities but are delaying placing their business while they shop about. Producers are working part time.

Larger Orders Coming In

Pittsburgh, April 11.—Carload specifications for nuts, bolts and rivets now are noted. Many buyers are issuing orders for quantities in excess of carloads so that the general tone of the market is greatly improved. While prices are not on a higher quotable basis, there is an absence of the concessions formerly available. Some plants still are operating one-third of capacity while others are slightly in advance of 50 per cent. Several carload orders for rivets have been placed during the past week. While an effort is being made to establish 2.10c and 2.20c, base Pittsburgh, as minimums on structural and boiler rivets, respectively, 2.00c and 2.10c have been available to date on desirable tonnage.

Prices Firm Up

New York, April 11.—Demand for bolts and nuts has increased in volume and prices now are much firmer. On the ordinary run of business, the 70 and 10 per cent discount is being maintained in most cases and 70 and 10 and 5 which was being shaded some weeks ago, no longer is a factor of any importance.

Lower Prices Withdrawn

Philadelphia, April 11.—The bolt market is firmer and makers generally are withdrawing lower prices which have been outstanding. It now is difficult to place business under the basis of 70 and 10 off for large bolts. The volume of inquiries is increasing and consumers who have avoided placing contracts for some time now are requesting protection over second and third quarters. The volume of the bolt business was 50 per cent better in March than in February and the March volume now is being exceeded. Rivets are firmer but there is not much business to test prices.

Hoop Demand Improves

HOOP PRICES, PAGE 1008

Pittsburgh, April 11.—Improvement is noted in hoops and bands as well as in hot-rolled strip steel. This is true particularly with regard to hoops. Some makers still are quoting 1.90c, base Pittsburgh, while others are quoting 2.00c and are firm on that basis. Orders are fairly heavy involving from single carloads up to several carloads at a time. Band sellers likewise are making an effort to obtain the same levels as apply on hoops but are somewhat hampered in connection with the

heavier bands which still are being sold upon a bar base. Bands are quotable at 1.75c to 2.00c, base Pittsburgh.

Wire Advances

Announced by Independents on Most Products; Orders Increasing

WIRE PRICES, PAGE 1008

Pittsburgh, April 11.—The feature of the wire products market the past week was the inauguration by independent mills of higher prices by $2 per ton on everything but plain wire and galvanized wire which remain at 2.25c and 2.75c, base Pittsburgh, respectively. The woven wire fencing discount likewise remains unchanged at 68 off for carloads and 67 off for less-than-carloads. These advances restore the old differentials which prevailed prior to the last reduction in nails several months ago. The American Steel & Wire Co. has made no change in its prices. The old and new independent quotations on nails, staples, etc., are listed as follows:

	Old price	New price
Wire nails	2.40c	2.50c
Coated nails, per count keg	1.90c	2.00c
Barbed wire, painted	2.55c	2.65c
Barbed wire, galvanized	3.05c	3.15c
Polished staples	2.55c	2.65c
Galvanized staples	3.05c	3.15c

Demand has been well sustained the past week or so, jobbers everywhere specifying liberally. While no specifications are for mixed carloads or single arloads of each product, the aggregate tonnage is fairly large. Wire mill operations continue up around 70 or 80 per cent of capacity. The Mississippi river commission of the first and second district of Memphis is asking bids for delivery of 895,000 pounds of galvanized wire, strand and staples, and 40,000 wire rope clips.

Jobbers Take Many Nails

Chicago, April 11.—Business coming to producers of wire and nails is the largest experienced in a long time and productive capacity is being engaged further each month. The market is strong and independent producers have moved quotations on nails to 2.50c, Pittsburgh, recently, thus re-establishing the usual differential of 25 cents over plain wire, the latter not being advanced from 2.25c Pittsburgh. Jobbers are taking considerable of this material and preparing for the increasing demand which is expected from consumers. Inquiry and buying on the part of practically all customers is on the increase.

To Install Strip Mill

Preparations are being made by the Trumbull Steel Co., Warren, O., to install its new 14-inch hot strip mill and auxiliary equipment. The installation of this unit was postponed several months ago owing to business conditions. In view of the recent change in the situation, however, the officials of the company have decided to complete the unit soon. When the new 9-inch hot strip mill of this company was built over a year ago provisions were made to house the 12-inch mill in the same building.

Plate Bookings Are Heavy

Car and Tank Requirements Stimulate Market—Prices Firm—12,000-Ton Pipe Line Allotted—Two More Lake Boats Up

PLATE PRICES, PAGE 1008

New York, April 11.—Big plate specifications have been placed in this district during the past week. The largest of them was in connection with car orders. Among the biggest requirements now before the trade are plates for cars for the Boston & Maine railroad. The American Locomotive Co. has been placing some plate tonnage. While most of the business during the past week included tonnages which had been outstanding for sometime and hence were at lower prices than now obtainable, the market is firm on new business. Numerous attractive tonnages were placed during the week at 1.50c base Pittsburgh. Several lots have been placed at 1.60c and 1.65c. Two mills have quoted 1.75c on inquiries.

A large consumer inquiring for an attractive plate tonnage says he has been quoted 1.40c base Pittsburgh. However, there is no evidence to show such shading is a factor in the market.

Move Ore Freighters Up

Cleveland, April 11.—Inquiries have come out this week for the steel, about 4500 tons each, for two additional ore freighters upon which lake yards are figuring. No additional boat contracts have been placed with lake yards however. Two inquiries for stills for about 1000 tons each, for Standard Oil Co. subsidiaries remain unplaced. Otherwise the market continues to develop a good miscellaneous demand. Prices are firm at 1.50c Pittsburgh minimum for tank steel with talk of higher being asked and obtained due to the attitude among the mills to quote more cautiously in view of the coal strike. Some sales of boiler steel have been made at 1.65c Pittsburgh.

Plate Mills Filling Up

Chicago, April 11.—With an unusual number of railroad freight cars under order, plate mills are receiving large specifications for plates and in addition to this a large order for oil storage tanks is providing much tonnage. General buyers of this form of finished steel are also taking more than formerly, with the result that plate mills are heavily engaged than for some time. The Inland Steel Co. today announced a minimum of 1.80c Chicago on plates for immediate specification. Other mills are holding to 1.60c, Chicago mill.

Fabricators Order Freely

Pittsburgh, April 11.—Small jobs involving around 50 tons of plates each awarded to fabricators in this territory have been particularly numerous during the past week for small storage tanks, water towers, stand pipes, etc. Larger awards apparently are rare although for the past several days fabricators have been ordering freely in lots up to and including 1000 tons. Occasionally a lot of 1500 or 2000 tons is booked. Most of these have been upon quotations available until last night of lower than 1.50c which now can safely be said to be the minimum available. One or two fabricators in this territory are working upon a project involving several 80,000 barrel oil tanks for a Texas oil company which will require approximately 5000 tons of plates. In addition to several other jobs awarded the Pittsburgh-Des Moines Steel Co., recently aggregating between 500 and 1000 tons, the Standard Oil Co., Buffalo, has ordered tank work involving 150 tons of plates. Bids will be opened on April 17 on one each oil barge and steel water barge for the United States engineers, New York City. About 500 tons of plates is involved.

Expect Pipe Line Division

Philadelphia April 11—Considerable plate business was placed in this district past week, some at the old prices on former protection but most of it at 1.50c base Pittsburgh. Several buyers in this district say this is the lowest figure they can develop. New inquiry has dropped off. The biggest business pending is 12,000 tons for the Seattle pipe line to be built by Western Pipe & Steel Co., San Francisco. No definite award of the steel yet has been made but it is expected 7000 tons to the Bethlehem Steel Co. and 5000 tons to the Lukens Steel Co. No award yet has been made on two boats for Merchant & Miners Transportation Co. but these contracts are expected to go to the Federal Shipbuildin Co. Considerable buying of car repair plates is expected. The Seaboard Air Line is inquiring for several hundred tons of plates, shapes and some bars. Eastern mills now are producing at about 40 per cent of capacity.

Southern Stocks Fall

Pig iron stocks in the Birmingham district during March receded from 134,393 tons to 105,960 tons, a reduction of 28,433 tons. Foundry iron on hand April 1 totaled 59,275 tons compared with 73,516 tons the previous month. Machine-cast April 1 was 28,197 tons, a reduction of 10,281 tons. Warrant stocks decreased 100 tons and stood at 660 tons. Basic stocks were reduced 3871 tons during March, 17,828 tons being on the banks April 1. One stack of the Woodward Iron Co. and two of the Tennessee Coal, Iron & Railroad Co. were blown in during last month bringing the number of stacks on the active list to 15.

Ford Breaks Record

With a total of 18,807 gross tons of pig iron produced during the month of March, the River Rouge A blast furnace of the Ford Motor Co., Dearborn, Mich., broke its previous record output. This was an average of 606.6 tons per day. The metal was all basic and required 1797 pounds of coke per ton of iron.

Scrap Buying Is Spotty

Small Sales in Scattering Grades Prevail in Present Movement—Speculation Appears Again and Prices Are High and Firm

SCRAP PRICES, PAGE 1078

Chicago, April 11.—Dealers find it difficult to buy or sell in the present market as the price spread frequently disappears. Buyers are resisting strongly the present upward tendency and melters are seeking to get as much as possible. Prices appear to be near the top of the present advance as mills are nearing the point of meeting requirements and building up reserves. Accumulations are gradually being turned into trade. The market appears to be approaching a balance between supply and demand. Steel mills and foundries continue to take fairly good lots but rolling mills are not in need. The Union Pacific railroad offers 3000 tons, the Great Northern 2500 tons, the Wabash 2140 tons and the Soo Lines 500 tons.

Market Strengthens Noticeably

Boston, April 11.—Scrap sales in New England have been heavy during the past week. Heavy melting steel is asked for by Pittsburgh district consumers and $10.50 eastern Massachusetts shipping point is freely offered. Borings, especially chemical, are in strong demand without sufficient quantities in sight to fill orders. As much as $11 has been offered and refused. Most of the chemical borings are already contracted for, 30 to 60 days ahead. Borings and turnings have moved freely at $6.50 shipping point.

Market Continues Its Rise

Pittsburgh, April 11.—While not substantiated to any great extent by sales to consumers at the maximums quoted in the scrap price tables, the scrap market is higher due mostly to bids by dealers. Indirectly, an influence has been exercised by the high levels paid recently by Mahoning valley district consumers. As high as $16.75 has been paid by the mills and considerable tonnage has been booked during the past two or three weeks at $16.50 or slightly under. Dealers have bid as high as $17 and recent railroad lettings have brought even higher figures. The market is $16.50 to $17 on heavy melting steel with other grades in harmony. Cupola cast has brought as high as $17.50 but not higher than $16.50 is obtainable on heavy breakable cast. Users shovel turnings are bidding up to $13.50 with axle turnings bringing 50 cents in advance of that figure.

Buying Was Active

Detroit, April 11.—Some generous buying movements held the iron and steel scrap market steady last week with prices unchanged from the week before. Automobile scrap products were in larger supply than in some time, dealers reported, but this was offset by the intensive buying by the mills.

Speculative Buying Continues

St. Louis, April 10.—The scrap market continues unsettled with dealers taking considerable interest in a speculative way. They are paying the railroads prices for scrap which are higher than can be realized from the industries. The latter are still purchasing, and sales of from 500 to 2000 tons are not uncommon. However, the disposition of consumers is to slow down. As a whole the market rules strong. New offerings are confined almost exclusively to the carriers, little country scrap arriving. Prices have reached levels where profitable shipments can be made from Southern points, and negotiations have been opened with holders in Texas and Louisiana. Heavy tonnages are held in the South. Railroad lists include the Mobile & Ohio, 500 tons; Union Pacific, 2000 tons; Kansas City Southern, 300 tons; St. Louis Terminal, 1700 tons; and Pere Marquette, 400 tons.

Some Little Scrap Moving

Birmingham, Ala., April 10.—Some scrap is moving in the Birmingham district but the aggregate business is far from finding satisfaction among dealers. The readjustment of quotations for scrap has not brought about an improved condition of trade although some sales are being made daily. All stocks continue in good shape. Heavy melting steel still is slow. Plenty of this grade is available.

Heavy Melting Strong

Buffalo, April 11.—The scrap market is firm. Heavy melting steel is strong at $15 and dealers are reluctant to sell at that price. No scrap is being produced in the district. None was produced last month and it will be another 30 days before any scrap comes out. No. 1 cast scrap is unusually strong and scarce. The price is $17 to $18. Turnings and borings are firm and the demand is heavy.

Valley Demand Reflected

Cleveland, April 11.—Demand in the Mahoning valley continues to impart strength to the Cleveland scrap market. Consumers generally in that territory are taking tonnage made up largely of heavy melting steel and bundled sheets. Demand in immediate Cleveland territory is limited. Prices on machine shop turnings, hydraulic compressed sheets, bundled sheets, borings and turnings, agricultural and railroad malleable are up 25 cents a ton. Heavy melting steel in the valley also has been advanced 25 cents to $16.25 to $16.50 a ton.

Small Lots Prevail

Philadelphia, April 11.—Scrap trading here comprises mostly small tonnages. Several steel works have offered to pay $14 for a good sized block of steel scrap, but dealers are asking $15 and in some cases $15.50. However, works have been buying up small lots at $13 and $14. This business forms a good total.

Car Wheels Stronger

New York, April 11.—Demand for car wheels for export has strengthened the local market on this grade to around $15 to $16 a ton, f.o.b. New York. This demand is not large, but is a strengthening factor in view of the scarcity of this material. Other grades are unchanged, but the tendency is upward, a development due more to the general improvement in other branches of the iron and steel industry than to any marked increase in demand for scrap. An improvement is especially noticeable in boring and turnings.

Tin Plate Mills

Averaging 80 Per Cent Operations—Consumers Specify in Advance

TIN PLATE PRICES, PAGE 1008

Pittsburgh, April 11.—Tin plate producers for the most part are a month ahead on shipments and production, and believe the maintenance of high operation rates indicates a most healthy condition. This is made possible by new specifications in advance of the scheduled time and due to the fact many customers are specifying their full month's quota in one order. This enables the mills to schedule operations as far ahead as May. One independent producer here operating at 100 per cent for several weeks past, has enough business in sight to schedule 100 per cent operations until May 1 barring interruption due to the coal strike. Most tin plate producers are well fortified with coal reserves for about two months. In addition to the one referred to several others in this and in nearby districts are on a 100 per cent basis and while individual plants of the American Sheet & Tin Plate Co. are working 100 per cent, its general average remains unchanged at 80 per cent of capacity. The recent advance on tin mill black to 3.15c, base Pittsburgh, has become general, that being the figure of the leading interest since April 1. An advance from the $4.75 per base box of 100 pounds, Pittsburgh, price, is mentioned as a possibility in some directions. According to large makers, however, there is generally expressed satisfaction over the present level since many independents have firmed up to that basis. Instead of $4.60 the latter are quoting and obtaining the $4.75 figure.

Specify in Volume

New York, April 11.—Specifications on tin plate contracts continue to be made in large volume. On new business there is a tendency to regard $4.75, base Pittsburgh, as the minimum on carload lots, although consumers desiring large tonnages probably still could develop $4.60. Material off stock lists continue to go on the average at $4.25 per base box, Pittsburgh, but stock lists as a rule have been pretty well wiped out. A large tea company has an inquiry out for 25 to 35 carloads of tin plate.

Strip Prices Higher

STRIP PRICES, PAGE 1008

Pittsburgh, April 11.—Considerable improvement is noted in connection

with both hot and cold-rolled strip steel the past week. Demand is well balanced between the two grades and represents a wide distribution and diversified use. Numerous consuming lines are ordering from a single carload up to several hundred tons at a time although the automotive industry keeps well in the lead. Makers are maintaining the $3 per ton advance registered last week, quoting $3.65, base Pittsburgh, on new orders for cold-rolled. The Trumbull Steel Co. has advanced $2 a ton on hot-rolled, going from 1.90c to 2.00c, base Pittsburgh, but local producers are maintaining that maximum on the narrow widths only. Cold-rolled is quoted at 3.65c, base Pittsburgh, while hot-rolled is quoted at 1.90c to 2.00c, base Pittsburgh.

Demand Is Fair

Youngstown, O., April 11.—Cold-rolled strip steel has been raised $3 a ton and hot-rolled $2 per ton by the Trumbull Steel Co., bringing its prices to 3.65c, Pittsburgh base, and 1.90c, Pittsburgh base, respectively. These advances are in line with those recently announced by other mills.

Warehouse Demand Fair; Some Prices Adjusted

WAREHOUSE PRICES, PAGE 1074

New York, April 11.—Improvement in demand for iron and steel is reflected in the local warehouse market by an upward movement in prices. One jobber recently advanced prices in bars, shapes, plates and black and galvanized sheets $3 a ton and in bands, $7.

Demand Slumps Slightly

Cleveland, April 11.—Some jobbers of iron and steel materials report demand in the past week has not been as active as that of the preceding one, although in the heavier products an active movement continues.

Unfilled Order Gain Is Largest in 22 Months

A substantial increase is reported in unfilled bookings of the United States Steel Corp., as of March 31, the total being 4,494,148 tons, a gain of 353,079 tons. This is the largest increase in actual tonnage since May 31, 1920, when the gain amounted to 580,719 tons. Comparisons follow:

Date	Total	Change, tonnage	Change, per cent	
Mar. 31, 1922...	4,494,148	353,079+	8.5	+
Feb. 28, 1922...	4,141,069	100,609—	2.307	—
Jan. 31, 1922...	4,241,678	26,736—	0.0062	—
Dec. 31, 1921...	4,268,414	17,872+	0.004	+
Nov. 30, 1921...	4,250,542	36,287—	0.84	—
Oct. 31, 1921...	4,286,829	273,841—	6.004	—
Sept. 30, 1921...	4,560,670	28,744+	0.63	+
Aug. 31, 1921...	4,531,926	298,398—	6.3	—
July 31, 1921...	4,830,324	287,544—	5.59	—
June 30, 1921...	5,117,868	364,619—	6.2	—
May 31, 1921...	5,482,487	362,737—	6.2	—
April 30, 1921...	5,845,224	439,541—	6.8	—
Mar. 31, 1921...	6,284,765	649,102—	10.32	—
Feb. 28, 1921...	6,933,867	639,297—	8.21	—
Jan. 31, 1921...	7,573,164	574,958—	7.59	—
Dec. 31, 1920...	8,148,122	873,359—	9.68	—
Nov. 30, 1920...	9,021,481	815,371—	8.26	—
Oct. 31, 1920...	9,836,852	537,952—	5.16	—
Sept. 30, 1920...	10,374,804	430,234—	3.56	—
Aug. 31, 1920...	10,805,038	313,430—	5.4	—
July 31, 1920...	11,118,468	139,651+	.7	+
June 30, 1920...	10,978,817	38,751+	0.35	+
May 31, 1920...	10,940,466	580,719+	5.6	+
April 30, 1920...	10,359,747	467,672+	4.51	+
Mar. 31, 1920...	9,892,075	389,994+	3.94	+
Feb. 29, 1920...	9,502,081	216,640+	2.3	+
Jan. 31, 1920...	9,285,441	1,020,075+	11.00	+

New Sheet Prices Firm

Large Tonnages Booked at Advanced Figures, though Bulk of Current Shipments Are at Former Levels—Building Trades Taking Heavy Lots

SHEET PRICES, PAGE 1008

Pittsburgh, April 11.—Booking of sheet orders continues heavy among all makers, and while mills possibly could increase operations they are being held down because of the coal strike. On April 5 the American Sheet & Tin Plate Co. advanced its prices $3 per ton to the levels of several independent producers on everything but electrical sheets and some specialties. The new prices are firm and are considered representative of the market, namely 3.15c for black, 4.15c for galvanized, 2.40c for blue annealed and 4.50c for automobile sheets, Pittsburgh. Shipments for some time will be billed at the old prices since users were given plenty of opportunity to book their prospective requirements. Orders were particularly heavy from automobile companies on protected quotations. Many placed sizable tonnages the moment the price increase became certain. Operations of the leading interest remain unchanged at 90 per cent of capacity. New demand has been fairly heavy for sheets used in building construction. Should lists of preferential or essential consumers become necessary as the coal strike progresses, it is the intention of sheet producers to help building programs already started or contemplated. Sheet mills generally have stocks of coal on hand for at least 60 days, and while heavily committed for the second quarter, they are indifferent to tonnages beyond that period. They will not take the initiative about increasing order books for the second quarter until the situation clears.

Selling in Large Volume

Buffalo, April 11.—Sheet orders are in large volume, ranging from carload lots to 300 tons, and principally black. The Seneca Iron & Steel Co. is operating at 75 per cent.

New Sheet Prices Firm

Chicago, April 11.—The recent advance of $3 per ton on all grades of sheets has been held to firmly. Demand is excellent from all quarters and consumers are providing for their requirements further into the future than formerly. The Inland Steel Co. is sold up for its entire production to July 1. Its sheet department has been running at capacity for several months.

Highest Output in Two Years

Youngstown, O., April 11.—Sheet mill rolling schedules in the Mahoning valley this week surpassed those of last week by 8 per cent and now stand at 84 per cent of capacity, the highest rate in over two years. Present rollings represent business entered just before the recent price advances to 2.40c for blue annealed, 3.15c for black and 4.15c, Pittsburgh, for galvanized and indications are that considerable more tonnage was taken by the mills here at these figures than was apparent shortly after the announcement. Prices continue firm. Inquiry is not as strong now as it was two weeks ago although this condition was expected in view of the heavy commitments then. A shortage of sheet mill labor is beginning to show up in certain parts of the Mahoning valley. In the opinion of some makers, this shortage will become acute during the summer months to the extent of curtailing operations. The coal strike has not affected sheet mill operations here as yet but unless fuel stocks at certain plants are replenished during the next two weeks, the situation may become critical and possibly may mean sharp curtailment in a number of cases. Demand for fine finished sheets is keeping pace with that for the common quality and mills rolling this grade have orders sufficient to maintain a six week operation. The specialty trade is showing increased interest in the market and some atractive tonnages are being booked for this purpose.

Book Tonnages at New Prices

New York, April 11.—Some sheet business has been booked in this district during the past week at the new prices, 2.40c, base Pittsburgh, for blue annealed, 3.15c for black and 4.15c for galvanized. All makers now are firm at these prices on new business. The greater portion of the tonnage now being specified, however, is on account of contracts booked before prices were advanced. The new figures apply only to a small fraction of the current shipments. Current requirements show a substantial improvement.

Week's Tonnage is Heavy

Philadelphia, April 11.—Current sheet business involves mostly specifications on contracts since practically all consumers were covered for the second quarter prior to the recent advance. The past week's business has been heavy and included a number of large tonnages on which protection has been outstanding. In view of the extent to which contracts were placed and protection was granted, not much business is being booked at the new prices of 2.40c, base Pittsburgh on blue annealed, 3.15c on black and 4.00c on galvanized, but the market is firm on this basis, on new business. Some middle western mills, by reason of the coal strike, are cautious about booking new business and these mills have instructed their sales agents to submit all inquiries.

The Atlas Foundry Co., Milwaukee, manufacturing gray iron castings, has filed a voluntary petition in bankruptcy, admitting liabilities of $37,116, and claiming assets of $6,229. The principal item of assets is machinery valued at $604. The largest unsecured creditor is the Gerlinger Electric Steel Casting Co., West Allis, with a claim of $6168.

Shape Buying Less Brisk

Building Contracts Placed in Week Total Only 32,000 Tons After 45,000 Placed in Each of Two Previous Periods

STRUCTURAL SHAPE PRICES, PAGE 1008

New York, April 11.—More than 30,000 tons of structural steel were involved among the larger projects placed formally in the past week. Of this amount, more than 22,000 tons went to the American Bridge Co. Of this, 5400 tons was for the Pershing Square building, New York, and 5600 tons for the Benjamin Franklin hotel, Philadelphia. Other sizable business included from 3000 to 3500 tons for a New York apartment hotel. New inquiry is holding up well and includes formally 7000 tons for the two Girard piers, Philadelphia. Industrial building continues small. Prices are tending strongly upward, but are unchanged at $64 to $70 a ton, erected, for fabricated material, and 1.50c to 1.60c, Pittsburgh, for shapes.

Building Still Active

Chicago, April 11.—Although structural projects contracted during the past week do not cover as heavy a tonnage as recently, the market still is active and business is coming to fabricators and mills in considerable volume. Prospective tonnages are such as to excite competition and keep the market active. The Stevens hotel, 15,000 to 20,000 tons is reported practically placed. Among projects placed in the past week, bridges form an important part and railroads were larger buyers than any other class. The Burlington placed 2500 to 3000 tons and is inquiring for 5500 tons additional. Plain material continues steady at 1.60c, Chicago mill. The Inland Steel Co. today advanced a new minimum price of 1.70c Chicago mill on shapes for immediate specification.

Aggregate Bookings Large

Pittsburgh, April 11.—Shape orders the past week were fairly numerous and specifications for the most part sizable. This was brought about through the expiration of periods for protection on levels lower than 1.50c, base Pittsburgh. In many cases the specifications presented exceeded the tonnage protected but mills generally are refusing such excess except at 1.50c. Producers are indifferent because of coal strike contingencies. On material fabricated and erected some low prices still are being done and some fabricators gladly see the work going elsewhere. Action on the H. J. Heinz Co.'s spaghetti building, 1500 tons, has been postponed until the last of this week.

Building Takes 3500 Tons

Boston, April 11.—The Park Square building, Boston, which has long been held up through financial considerations has finally started, and contract for 3500 tons of steel has been let to McClintic-Marshall Co. Other recent awards in this market bring the total to 5000 or 6000 tons.

Old Protections Covered

Philadelphia, April 11.—Considerable shape business was booked last week, much of it at old protections. Considerable protection seems to have been granted prior to advance to 1.50c base Pittsburgh, but the latter price is being maintained firmly on all new business. While a large amount of structural business is pending most of it has been up for some weeks and new projects have not been numerous in the past week. The biggest was a mill building involving 300 tons.

CONTRACTS PLACED

Park Square building, Boston, 3500 tons, to the McClintic-Marshall Co.

Benjamin Franklin hotel, Philadelphia, 5600 tons, to the American Bridge Co.

Bridge for Philadelphia & Reading railroad, 500 tons, to the American Bridge Co.

Alterations to the Empire hotel, New York, 400 tons, to the American Bridge Co.

Passaic Trust & Safety Deposit Co. building, Passaic, N. J., 350 tons, to the American Bridge Co.

Lawrence street subway station, Brooklyn, 600 tons, to the American Bridge Co.

Fourteenth street subway extension, New York, 1200 tons, to the American Bridge Co.

Pershing Square building, New York, 5400 tons, to the American Bridge Co.

High school, Middletown, N. Y., 350 tons, to the American Bridge Co.

Bank building addition, Norfolk, Va., 450 tons, to the American Bridge Co.

Plant addition, Russell, Birdsall & Ward Bolt & Nut Co., Port Chester, N. Y., 300 tons, to the American Bridge Co.

Commercial National Bank building, High Point, N. C., 650 tons, to the Charlotte Steel Co.

Two highway bridges for Maine, 300 tons, to the Boston Bridge Works.

Department store, Scranton, Pa., 1000 tons, to the Anthracite Bridge Co.

Stacks for Brooklyn Edison Co., Brooklyn, 350 tons, to the Chicago Bridge & Iron Works.

University club, Pittsburgh, 750 tons to the American Bridge Co.

Building for the Y. M. C. A., Columbus, O., 350 or 400 tons, to the Riverside Bridge Co.

Warehouse, Greensburg, Pa., 100 tons, to the Memphis Steel Construction Co.

Bridges for Chicago, Burlington & Quincy railroad, 2585 tons, to the American Bridge Co. and 200 tons to the King Bridge Co.

Reconstruction of bridge at Parker, Wash., for Union Pacific railroad, 760 tons, to the American Bridge Co.

Babcock highway bridges, St. Louis county, Minn., 201 tons, to the American Bridge Co.

Structural steel for track elevation work, Chicago, for Chicago, Milwaukee & St. Paul railroad, 148 tons, to the American Bridge Co.

Structural steel for Grand opera house roof, St. Louis, 118 tons, to the Decatur Bridge & Iron Co.

Greenwich bank building, New York, 300 tons, to Levering & Garrigues.

Hotel apartment, Eighty-fifth street and Madison avenue, New York, 3100 to 3500 tons, to the Harris Structural Steel Co.

Junior high school, Niagara Falls, N. Y., 200 tons, to Kellogg Structural Steel Co.

Bridge, Philadelphia & Reading railroad, Norristown, Pa., 150 tons, to Seeds & Durham.

Bridge, Philadelphia & Reading railroad, Ringtown, Pa., 150 tons, to P. J. Campion.

National Deposit bank, Brownsville, Pa., 485 tons, to the Fort Pitt Bridge Works.

Apartment, Grand concourse, New York, 1500 tons, to the Bethlehem Fabricators, Inc.

CONTRACTS PENDING

Gun shed extension, Puget sound navy yard, 280 tons, bids open April 12.

Jefferson Medical college building, Philadelphia, 750 tons, bids being asked.

Bridge for the city of Boston, 3000 tons, bids to be opened April 24.

Power plant for the Scranton Lace Co., Scranton, Pa., 100 tons, preliminary figures asked.

Power plant for the Boston Elevated railway, Boston, 200 tons, pending.

Girard piers, 3 and 5, Philadelphia, approximately 7000 tons, preliminary figures asked.

Pier H, Brooklyn navy yard, Brooklyn, between 50 and 100 tons, bids being asked.

Bridge work for the Chicago, Burlington & Quincy railroad, 5500 tons including 3000 tons at Omaha and 2500 tons at Denver, bids being taken.

Apartment house, Cleveland, 1200 tons, bids being taken.

Sales of Concrete Bars Continue Active

REINFORCING BAR PRICES, PAGE 1008

Chicago, April 11.—In balance with heavy demand for structural steel, reinforcing bars for concrete work are inactive and from the large tonnage pending, considerable sales are being made each week. This business is well distributed among sellers and represents a more active market than has been seen in many months. The addition to the Calumet station of the Commonwealth Edison Co., Chicago, has been let to the George A. Fuller Co., but the bars have not yet been placed. One of the most important projects now pending is the office building of the Belknap Hardware Co., Louisville, Ky., on which new bids have been asked by architects.

Concrete Bar Minimum 1.50c

Pittsburgh, April 11.—Until last night reinforcing concrete bars were available at 1.40c, base Pittsburgh, on protected quotations. Now, however, 1.50c represents the market on that product with all makers firm. Contractors have ordered in sizable lots from the mills at around 1.40c, but from now on will pay 1.50c or more. Recent awards for the most part are small, involving 50 or 100 tons each but several others of larger proportions are coming up for attention.

Implement Manufacturers Buy

Cleveland, April 11.—Demand for concrete reinforcing and hard steel bars is increasing. Agricultural implement manufacturers have been replacing some sizable tonnages and are more active in the market than they have been for many months. Road construction continues to call for considerable tonnage of bars. Contracts about to be awarded represent 500 to 1000 tons including about 300 tons for a stretch in Trumbull county and about 150 tons at Painesville. Most mills will not quote under 1.50c Pittsburgh or mill but one lot of 200 tons in northern Ohio is reported to have gone this week at 1.40c Pittsburgh.

More Business Booked

Philadelphia, April 11.—Considerable concrete bar business is coming out. Some of that placed recently was at prices quoted prior to the recent price advance but most of it was at the current 1.50c base Pittsburgh figure. One lot of 1000 tons was placed at 1.50c.

CONTRACTS PLACED

Steinhart aquarium, San Francisco, 130 tons, to the Pacific Coast Co.

Walter N. Moore building, San Francisco, 650 tons, to the Columbia Steel Co.

Shell house extension, Mare Island navy yard, 100 tons, to Kyle & Co.

Freight house for Burlington railroad, Chicago, 800 tons, to the Corrugated Bar Co.

Chemistry building, University of Iowa, Iowa City, 300 tons, to the Corrugated Bar Co.

Lend-a-Hand club, Davenport, Iowa, 100 tons, to the Corrugated Bar Co.

Viaduct at Ironwood, Mich., 300 tons, award changed to the Paul J. Kalman Co.

Athletic club, Indianapolis, 180 tons, to the Hugh J. Baker Co.

Roosevelt school, Des Moines, 300 tons, to the Concrete Engineering Co.

Windermere hotel addition, Chicago, 1000 tons, to the Inland Steel Co.

Dam at Tony, Wis., 150 tons, to the Concrete Steel Co.

Building Canton, O., 200 tons to a nearby mill.

CONTRACTS PENDING

Highway work, Oregon state highway commission, 220 tons, bids open April 15.

Building for W. P. Fuller & Co., San Francisco, 400 tons, bids open April 17.

Building, Shanahan Transfer & Storage Co., Wilkinsburg, Pa., 175 tons.

Viaduct, Schenectady, N. Y., 1200 tons, pending.

Viaduct, Hazelton, Ind., 170 tons, pending.

St. John's hospital addition, Springfield, Ill., 100 tons, pending.

Streatorville hotel, Chicago, 600 tons, pending.

St. Scholastica's academy, Chicago, 100 tons, pending.

Belknap Hardware Co., warehouse, Louisville, Ky., 2000 tons. New bids April 12.

Fenske Bros. Furniture Co., Chicago, 250 tons, bids in.

Broadmore hotel, Chicago, 200 tons, pending.

Building Elyria, O., 100 tons, bids being taken.

Road construction Trumbull county, O., 300 tons, bids being taken.

Road construction Painesville, 150 tons, bids being taken.

Stadium, New York Yankee baseball club, 800 tons, general contract to the White Construction Co.

Grain elevator, Norfolk, Va., 500 tons, bids asked.

Sewer work, Baltimore, 200 tons, general contract to Ryan Construction Co.

Sewer work, Towsey, Md., 200 tons, general contract to Pedro Construction Co.

Ore Prices Intimated to Consumers

ORE PRICES, PAGE 1074

Cleveland, April 11.—More than one large producer of iron ore is proceeding on the assumption that prices this year will be 75 cents to $1 less than last year, though the establishment of prices still waits on the outcome of pending rates cases. In certain cases, associated pig iron manufacturers are endeavoring to get advance information on costs, and the closest that can be figured for them at this time is a reduction to the extent indicated, subject to variation when freight rates are announced. Heretofore it has been thought that the reduction on vessels freights would amount to 10 to 15 cents per ton, but it is reported that some vessel tonnage has been offered at 20 cents less than last year.

The Lake Superior Iron Ore association gives the following statistics relating to ore stocks on hand April 1:

	Shipments April	Shipments Season	Balance on dock April 1
Buffalo and Tonawanda	773	190,675	301,255
Erie	6,571	293,074	448,819
Conneaut	153,975	4,951,884	1,474,889
Ashtabula	123,322	2,613,195	2,364,642
Fairport	10,682	1,439,195	245,741
Cleveland	22,623	2,247,254	1,314,585
Lorain	54,061	1,136,025	533,202
Huron	.....	509,233	678,020
Toledo	38,620	214,229	319,610
Total	410,627	13,594,764	7,680,763
Total for previous year	320,871	34,836,261	8,379,869

Raises Common Labor Rate

Philadelphia, April 11.—The Reading Iron Co. has advanced common labor from 22½ cents to 24 cents per hour and the puddling rate from $6 to $6.50.

Steel Rails Again Active

New York Central Inquires for 32,000 Tons, Boston & Maine for 11,000—Nickel Plate Buys 12,000 Tons—Car Buying Eases Up

RAILROAD TRACK MATERIAL PRICES, PAGE 1008

New York, April 11.—The New York Central will open bids April 20 on 32,000 tons of rails. Originally this road purchased 125,000 tons of rails for 1922, taking options on an additional 25,000 tons. Since then it has exercised some of these options and extended the others with the purpose of placing the rails later. It now seems certain that the New York Central will purchase for 1922 at least 182,000 tons which represents a normal year's rail business for that system. Several small lots of rails ranging from 500 to 1000 tons have been placed by eastern roads at $40 base, mill, during the past few weeks. In addition, at least three fair sized tonnages of girder and high T-rails have been placed by street railway systems in this district at prices ranging from $45 to $50 mill. The Boston & Maine is about ready to close on 11,000 tons.

New inquiry includes more than 3000 cars, with considerable more contemplated. Car orders during the past week have been relatively light. The American Locomotive Co. has booked orders for 28 locomotives and the Baldwin Locomotive Works 18.

The New York Central's recent purchase of freight cars was of 19,000 and not 16,000 as the tentative list showed. The additional 3000 cars were divided 2000 to the General American Tank Car Co. and 1000 additional to the Pressed Steel Car Co.

Car Buying Falls Off

Chicago, April 11.—After a week of car buying in which more cars were placed than during the entire year 1921, railroads are taking a breathing spell and during the past week only one lot of importance was booked. This involved 1050 steel hoppers for the Louisville & Nashville.

Some small tonnages of standard steel rails have been sold by western producers, one lot involving 8000 tons. Tie plates are in demand, the Northern Pacific having placed orders for 6000 tons, of which 3500 tons went to the Illinois Steel Co. and the remainder to supplies companies. The Chesapeake & Ohio has also placed 6000 tons of tie plates and other sellers covered lots of 1800 tons and 1200 tons, the total sales of this product running close to 15,000 tons during the past week at Chicago. Spikes and bolts have been moving freely and among several good sized lots 6000 kegs of spikes is the largest, while several lots of 1000 kegs each of bolts have been booked.

Still Buy Light Rails

Pittsburgh, April 11.—Light rails continue to be ordered from the mills although there has been some falling off due to the effect of the coal strike. Some non-union operators are ordering light rails and are paying 1.45c, base Pittsburgh, all makers being firm on that price basis, uniform with the Carnegie Steel Co. A few rail producers are definitely out of the market. The relaying rail market is practically a dead issue.

Spike plant operations continue on the basis of approximately 80 per cent of capacity. Jobbers have been ordering spikes freely in lots of from 250 to 1000 kegs. Other companies now are quoting the levels announced by the Republic Iron & Steel Co., namely 2.25c base Pittsburgh on standard and 2.50c an small spikes. Track bolts are quoted at 3.00c to 3.25c base Pittsburgh. Tie plates at $33 to $38 are unchanged.

Nickel Plate Buys Rails

Cleveland, April 11.—The Nickel Plate has distributed 12,000 tons of rails for 1922 delivery of which 8000 tons will be rolled by the Carnegie Steel Co., 3000 tons by the Lackawanna Steel Co. and 1000 tons by the Inland Steel Co. This road also placed 1500 tons of tie plates with the Carnegie Steel Co. and about as much tonnage of splice bars with the Lackawanna Steel Co. The New York Central railroad has placed 40 switching locomotives with the Lima Locomotive Works which also has taken 10 for the Burlington. Three other lots of locomotives are pending.

The Lorain Steel Co. has taken 2000 tons of special high T rails for the Cleveland Railway Co.

Buys Tie Plates

Philadelphia, April 11.—The Pennsylvania railroad has just bought 357,000 tie plates, 75,000 heat-treated track bolts and 250 net tons of track spikes. The Philadelphia & Reading is inquiring for 500 kegs of heat treated track bolts.

CAR ORDERS PLACED

New York Central, 3000 additional, 1000 to the Pressed Steel Car Co. and 2000 to the General American Tank Car Co.

Louisville & Nashville, 1050 hoppers, 550 to the Cambria Steel Co. and 500 to the Chickasaw Shipbuilding Co.

Boston & Maine, 128 cars, 30 milk to the Laconia Car Co., and 65 passenger, 20 smoking, eight combination baggage and smoking and 5 combination baggage and mail to the Osgood Bradley Car Co.

Lake Champlain & Moriah, 10 ore cars and 12 ore car bodies, to the Pressed Steel Car Co.

Grand Trunk, repairs to 250 refrigerators, to the National Steel Car Corp.

Merchants' Dispatch, 1300 refrigerators, to its own shops.

United Railways, St. Louis, 50 cars, to its own shops.

Atlantic Coast Line, 500 box car underframes, to the Pressed Steel Car Co.

CAR ORDERS PENDING

Argentine state railways, 50 caboose and 50 baggage, bids asked.

Florida East Coast, 400 refrigerators, bids asked.

Chicago & Northwestern, new bids asked on 3100 freight.

Missouri, Kansas & Texas, 200 automobile, about to ask bids.

American Refrigerator Transit Co., St. Louis, 2000 refrigerators, bids asked.

Chesapeake & Ohio, 1500 box and 200 stock, bids asked until April 17.

Missouri Pacific, repairs to 200 refrigerator cars, bids asked.

Semifinished Is Scarcer

Buyers Having Difficulty in Placing Sheet Bars and Billets as Some Makers Withdraw from Market—Effect of Coal Strike Noted

SEMIFINISHED STEEL PRICES, PAGE 1008

Pittsburgh, April 11.—Because of a shortage of semifinished steel some consumers have not been successful in placing tonnage. A few makers, including a large independent steel company here, are practically out of the market and are not quoting on current inquiries. Others are fast assuming this attitude due to the coal strike. Several inquiries each involving 1000 to 5000 tons of rerolling billets several for 1000 tons or more of sheet bars are meeting with indifference, particularly with reference to open-hearth steel. Mills desire to conserve their steel supply for their own use or for customers already on their books. One inquiry for 1¼-inch billets issued recently involves 2000 tons. Another billet inquiry now being circulated calls for 5000 tons of assorted sizes. Billets generally are quoted at $29, Pittsburgh or Youngstown, for the 4 x 4-inch and $31 for the smaller. On the inquiry for 1¼-inch billets already referred to, $2 above the market was quoted here.

Makers are obtaining $31, Pittsburgh or Youngstown, for sheet bars without difficulty, the only handicap being one of ability to make delivery. Steel mills generally refuse to fill up their order books with material which they may not be able to deliver later because of a possible coal shortage. Forging billets are quoted at $34 to $37, the maximum representing the Carnegie Steel Co.'s price. So far as reported, all makers now are naming $38 on wire rods and 1.50c on skelp, regular customers for both products specifying, although new business is somewhat limited.

Wire Rods Placed At $38

New York, April 11.—Good tonnages of wire rods have been placed in this district at $38, base, Pittsburgh. As far as known this price now is the lowest obtainable.

Steel Shortage Noted

Youngstown, O., April 11.—Consumers of sheet bars who usually obtain their supply from mills in this district will meet with difficulty in covering their requirements for this quarter with mills here, unless they already have done so. The leading maker now is out of the market for all grades of semifinished material. Another producer reports a shortage of steel at its plant and hence is not inclined to quote. The third producer is sold ahead for April and May. Sheet bars are firm at $31, Youngstown, with only a limited tonnage available for extended delivery. Light billets are quoted at $31 and the heavy grade at $29.50, Youngstown. Slabs are held at $30.50 Youngstown. A fairly good demand exists for all grades of semifinished.

Book 4000 Tons of Sheet Bars

Cleveland, April 11.—A stronger tone is noted in the market for semifinished material, due in a measure to the effects of the coal strike, although prices are unchanged. A good volume of inquiry is being received for sheet bars and billets, and a leading producer continues to book a fair amount of business at the prevailing prices. A lot of 4000 tons of sheet bars for April-May delivery to a consumer in the Canton district has been closed. It is believed $31, Youngstown, was paid, and that the business went to a steel plant in the Canton territory. The McKinney Steel Co. is to resume the operation of four of its open-hearth furnaces May 1.

Sales Reach 10,000 Tons

Philadelphia, April 11.—The first billet business of any importance in a long time developed in the past week. At least 10,000 tons of open-hearth rerolling billets and more than 1500 tons of open-hearth forging billets were sold. Most of this business was at the old prices, but considerable was at the new prices of $29.50 base Pittsburgh for rerolling and $34.50 for forging. In most cases the old prices have been withdrawn and the market is firm at these prices. On new business, fair sales are reported of wire rods at $38 base Pittsburgh, and this is the minimum.

Pipe Buying

Has Been Heavy—Cast Grade Buying More Freely

PIPE PRICES, PAGE 1008 AND 1074

Pittsburgh, April 11.—Tubular goods buyers are increasing their stock orders. Pipe makers, particularly the larger Mahoning valley producers, could easily run their open-hearth capacity 100 per cent for a month or six weeks on the pipe business alone booked in the past two weeks. Outstanding tonnages of line pipe are absent but each producer has received a sizable aggregate of small orders. Because of the possible interference with operations due to the coal strike, new discounts may not come for several weeks. In the meantime, effective April 6, pipe mills announced a reduction in the preferential on plain end pipe to 1 instead of 3, thus decreasing the allowance from $6 per ton to $2, making the extra the same as it was six to nine months ago.

Some pipe mill operations are increasing. The Monongahela Tube Co. is scheduled to operate its No. 2 pipe furnace beginning April 17. The National Tube Co.'s Shelby mills at Ellwood City, Pa., are operating at nearly full capacity. The general average is slightly in advance of 70 per cent.

Pipe Tonnage Increasing

New York, April 11.—Business in cast iron pipe is coming out in increasing volume, especially from private sources. Eastern makers are now sold up from four to six weeks, and virtually all instances are operating at as near capacity as is possible. Quotations, while unchanged, are strong with the tendency upward. A lot of 200 tons of 30-inch pipe for Newark, N. J., the business going to the Warren Foundry & Machine Co. On a lot of 1000 tons for New York city, Robert Carter Contracting Co., Brooklyn, was awarded the general contract.

Oil Well Tonnage Placed

Cleveland, April 11.—The 1300 tons of oil well pipe for the East Ohio Gas Co. has been closed and it is understood it will be furnished by a valley producer.

Quotations Up $2 Per Ton

Chicago, April 11.—An advance of $2 per ton has been made on cast iron pipe, bringing 6-inch to $44.10, Chicago, and 4-inch to $48.10, Chicago. This increase is due to the sold-up condition of many shops. The National Cast Iron Pipe Co. has taken 1000 tons at Duluth and 260 tons at Fort Dodge, Iowa. The United States Cast Iron Pipe & Foundry Co. has taken 350 tons at Youngstown. Bids will be opened April 17 at Detroit on 5000 tons and at Dubuque April 14 on 400 tons. Inquiries for about 3000 tons of gas pipe have been made within the past few days by private buyers.

Southern Quotations Advance

Birmingham, Ala., April 10.—The cast iron pipe trade reports improvement. Several orders were received the past week. Orders in hand and in sight will warrant steady operation of plants several months ahead. Cast iron pipe quotations advanced this week, 6-inch now being sold at $34.50 Birmingham with 4-inch and 3-inch $44.50. Shipments of pipe are active.

Ferro Advanced

Again, This Time $5 to $70—Importers Expected to Follow

FERROALLOY PRICES, PAGE 1008

New York, April 11.—Domestic producers of ferromanganese, following big sales over the past week, have advanced their price on standard metal by $5 to $70, c.i.f. tidewater. The importers still are quoting $65 tidewater, but are expecting cables from their British principles instructing them to follow the advance. New York importers alone have sold about 3500 tons during the past week. Most of the orders involved small or moderate-sized tonnages. Numerous small tonnages are pending.

Sales of spiegeleisen during the past week aggregated about 1000 tons. This business was booked at prices ranging from $27.50 to $30, furnace, for 20 per cent metal. The situation resulting from the coal strike has led to a stiffening of the spiegeleisen market and the minimum price on 20 per cent metal now is $30, furnace.

Sales Near 7500 Tons

Philadelphia, April 11.—Total sales of ferromanganese in the past week by importers and eastern producers aggregated 7000 to 7500 tons. All except one sale were at the old $62.50 tidewater price which had been outstanding. It is learned that a small tonnage was sold at $65. The reason for the advance to $70 tidewater is

the difficulty in getting coke and the increased price is necessary to cover coke. Eastern ferromanganese producers now are paying around $10 delivered furnaces for by-product coke. New ferromanganese inquiry is small. No word been received whether English producers will advance to $70. This price is believed to be only temporary and probably will be withdrawn if the coke situation eases.

Many Ferro Users Cover

Pittsburgh, April 11.—Immediately prior to the recent advance of $2.50 per ton on ferromanganese, consumers booked heavily for their requirements for from two to six months. It is estimated that approximately 9000 or 10,000 tons were sold in lots of from 300 to 1500 tons. The Wheeling Steel Corp. purchased two lots of less than 500 tons each. Importers of English material have advanced their prices to the same level. While only a few inquiries involving a single carload or 100 tons now are current, it is believed consumers shortly will issue inquiries and an active market for a week or two is expected.

In spiegeleisen a like measure of activity ruled lately, with several users placing orders for from 200 up to 2500 tons at a time at prices from $25 to $30, f.o.b. furnace, for the 19 to 21 per cent depending upon the quantity. The maximum of $30 is understood to apply to single carloads.

A few ferrosilicon users have placed contracts involving several hundred tons at prices from $55 to $57, freight allowed. Ferrochrome users likewise have been in the market, some steel companies in the Pittsburgh and Canton, O., territories contracting for domestic material on the basis of 11 to 12 cents for 6 to 8 per cent carbon ferrochrome. Foreign material is offered at a trifle under these figures. One large consumer here is understood to have placed a contract for 3000 to 5000 tons.

Both domestic and Foreign ferrotungsten is being offered at around 40 cents although higher prices are not impossible due to the coming tariff.

Shipping Ore to Docks

Duluth, April 11.—First shipments of iron ore from the mines this season were received at the Great Northern docks at Superior today. It is not expected that the first boat will be loaded before April 30. Other docks expect to receive ore by the end of this week and some ore may be loaded into the boats at Duluth by April 21. Mining operations are gradually increasing and there is some talk that certain independent companies which cut wages heavily to offer employment last winter may go to a slightly higher figure to conform with the wages still being paid by the Oliver Iron Mining Co. The latter company is not planning to make a reduction. The Inland Steel Co. started mining today at the Laura mine, near Hibbing.

Plans New Bolt Plant

The Russell, Bursdall & Ward Bolt, Nut & Rivet Co., Port Chester, N. Y., has purchased a site of 27 acres at Coreopolis, Pa., on which it will erect a branch plant for the manufacture of bolts, nuts and rivets.

The Nonferrous Metals

Good Business and Other Factors Are Influences for Strength in All Metals — All Prices Higher

	Copper—Electro delivered	Copper—Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	†Nickel spot
April 5....	12.75	12.75	29.50	4.90	4.85	17.75	4.50	34.00
April 6....	12.80	12.87½	29.62½	4.92½	4.85	18.00	4.62½	34.00
April 7....	12.87½	13.00	29.75	5.00	4.87½	18.00	4.65	34.00
April 10....	13.00	13.00	31.25	5.05	4.87½	18.00	4.65	34.00
April 11....	12.92½	13.00	30.62½	5.05	4.95	18.00	4.75	34.00

†Open market quotation.

NEW YORK, April 11.—Prices for all the principal nonferrous metals have advanced this week, both here and in London. The strength here has been based substantially on expanded buying of metals and metal products, with steadily declining stocks in producers' hands. The improvement abroad has been due to gradually expanding world demand for materials, expectations of some economic results from the Genoa conference, the easier money rates in London, the rise in sterling rates and the more cheerful reports from this country. The coal strike has had little noticeable effect as yet on the metal markets.

The copper market rebounded quickly from the pessimism which came with the announcement of the resumption of the porphyry properties. Whereas sales of electrolytic had been made a week ago as low as 12.50c delivered, a large volume of inquiry appeared in the market and it recovered 12.87½c to 13c, delivered, for prompt, April and May deliveries. After selling for export as low as 12.75c, c.i.f., business was done at advancing prices to 13.25c, c.i.f. European port. Outside market prices also advanced to 13c, delivered. Lake kept pace with electrolytic, advancing to 13c, delivered. Casting copper was quoted 12.50c to 12.62½.

Three advances have been made by the American Smelting & Refining Co. in the price of lead since March 30, each of $2 a ton, the last advance being April 7, to 5c a pound, New York. The lead situation is extremely strong, with consumption increasing more rapidly than production. In the outside market, sellers have continued to ask premiums of $1 to $2 a ton over the leading interest, quoting 5.05c, New York, on Monday and still a little higher Tuesday. May commanded a premium of about $2 a ton over prompt.

The zinc market has advanced only ¼ cent from the low levels of the last week in March, when business was done March 28 at 4.62c, East St. Louis. On April 10 prime western was scarce at 4.87½c, East St. Louis, and today it was 4.92½c to 4.97½c. The London market has advanced steadily.

The London tin market made its first considerable advance April 10 that it has made in months, reflecting a sudden burst of bullish sentiment and speculative buying. American buying of tin has been good in recent weeks, but the London market until this week gave it little recognition, until the current jump of £5. From Friday to Monday the New York market advanced ¾ cents, due to higher import costs. The recovery in sterling was another factor. Straits sold here throughout last week at about 30.50c, but advanced Monday to 31.25c on spot, 31.37 1/3c on futures. The arrival of 2000 tons the first 10 days of the month, together with the 3000 tons in stock as of April 1, making supplies of 5000 tons, has caused some pressure on the spot market.

The International Nickel Co. revised its list of nickel, nickel alloy and monel metal prices. Shot and ingot nickel quotations were reduced 5c to 36c; electrolytic 4c to 39c; some of the products' prices were reduced by 12c a pound.

The leading aluminum interest has not revised its prices, but the outside market has advanced to 18c, New York, on virgin ingot 98 to 99 per cent. A good inquiry has been in the market for nearly all descriptions.

The antimony market has advanced to 4.75c, duty paid, from the recent low of 4.15c, due to absorption of cheap lots which had pressed on the market. Tariff prospects are a factor.

Mill Products

(Base prices, f.o.b. mill)

SHEETS	
Copper, hot rolled 24 oz., min....	20.25
High brass	16.25
Zinc, ga. 9 to 18 (plates ½c less)	7.50
Lead, full sheets (cut ¼c more)..	7.75
SEAMLESS TUBES	
High brass	18.00
Copper	20.75
RODS	
High brass, round, ¾ to 2½ inch	14.25
Naval brass rod.....	17.25
WIRE	
Copper	14.75 to 15.00
High brass	16.75

Old Metals

(Dealers' Buying Prices)

HEAVY RED BRASS	
Cleveland	8.50 to 9.00
New York	7.50 to 7.75
HEAVY YELLOW BRASS	
New York	5.25 to 5.50
Chicago	5.25
Cleveland	5.00 to 5.50
ZINC	
New York	2.50 to 2.75
Cleveland	2.00 to 2.25
Chicago	2.00 to 2.50
HEAVY COPPER AND WIRE	
Cleveland	10.00 to 10.50
Chicago	9.50
New York	9.00 to 9.25
RED BRASS TURNINGS	
New York	7.00 to 7.25
Cleveland	6.50 to 7.00
Chicago	6.00
YELLOW BRASS TUBING	
Cleveland	5.00 to 5.50
NO. 1 BRASS ROD TURNINGS	
Cleveland	4.50 to 5.00
New York	5.00 to 5.25
Chicago	4.50
ALUMINUM BORINGS	
Cleveland	4.50 to 5.00

More Mines and Ovens Suspend

Organizers' Gains in Connellsville District Believed To Be Temporary, though Independent Coal and Coke Operators Contemplate Shutdown Until Sept. 1— Furnaces Banked for Lack of Fuel

PITTSBURGH, April 11.—Inroads into nonunion coal mine territory by union organizers continue to be marked by a certain measure of success, according to admissions made here. The lower Connellsville district is practically closed, from which point the organizers' work has progressed eastward into "fair chance territory," as it is called, then northward to the Greensburg and Uniontown district, with the West Moreland field apparently the next objective.

In the Uniontown field, it is claimed that 8000 nonunion men have ceased work, out of the 21,000 employed when the strike was called. The normal working force is 40,000. Union figures probably include some of the 19,000 who were idle prior to the strike.

District No. 5, United Mine Workers, announces that 13 more mines in the nonunion Connellsville district closed yesterday, making a total of 85 mines inactive, involving "in excess of 30,000 miners." These 85 mines include many of the smaller operations with some small five-car per day mines. On the otherhand, the H. C. Frick Coke Co., W. J. Rainey and the Hillman Coal Co. report nonunion miners are returning to work.

Many of the 30,000 referred to are not organized and are said to be out through intimidation. As numerous others have affiliated themselves with strikers by being enrolled at $1 each, it is expected that in another week many of the men will be back in the mines. It is reported in Uniontown that independent coal and coke operators plan to announce a complete shutdown of the Connellsville region until Sept. 1, which possibly will be accompanied by eviction from company houses and a withdrawal of credit from company stores.

That the close of the first week of of the coal strike found it more effective in the Connellsville district than was expected is generally admitted. Many of the H. C. Frick Coke Co.'s river mines, which the Carnegie Steel Co. depends on for coal, are practically idle. This has led the Carnegie company to seek coal in the Connellsville district.

The Carnegie company has blown out a furnace at its Ohio works, Youngstown, O. It will not blow in one there, as contemplated. Only four furnace are active at the Ohio works. Since the first of the month one furnace has been blown in at Farrell, Pa. Plans for additional open-hearth operation at Farrell, as well as the blowing in of an additional blast furnace there are in abeyance. The company's Isabella furnace No. 1, Northside, Pittsburgh, has been blown out on account of the fuel shortage and a second furnace may be banked soon. The third will not be started for a time. This leaves the Carnegie company with 33 furnaces in blast, whereas on April 1, it intended to be operating 41 by this time. Operations at Mingo Junction, O., likewise have been curtailed. Instead of 90 per cent of steel ingot-making capacity active, as contemplated for this week, the Carnegie company probably has less than 82 or 83 per cent active.

Furnace Is Booked

The Shoenberger furnace of the American Steel & Wire Co., here was banked today, making both furnaces of the company idle. The company's main plant at Donora, Pa., has a large coke supply and will continue to operate.

The Republic Iron & Steel Co., and other independent producers are banking blast furnaces, and others probably will do so unless efforts of nonunion coal mine operators to have their men return to work are successful.

The Jones & Laughlin Steel Co., is practically out of the steel market, refusing to quote on new inquiries. It aims to keep order books and coal supplies well balanced. Other producers likewise are avoiding commitments where there is a possibility that they will not be able to fulfill them.

It is reported that the large coal producers are posting notices to the effect that unless their men return before the end of the week efforts will be made to operate the mines without them. Here and there such efforts have resulted successfully, and it is stated that each day finds more nonunion miners back at work. Mines Nos. 2 and 5 of the H. C. Frick Coke Co., in Springfield township, Mercer county normally employing about 800 men, resumed operations when 300 to 400 men returned.

The report that the Slickville mine of the Cambria Steel Co., is idle is denied. Operations continue on a nonunion basis.

Commissioner R. W. Gardiner, of the Pittsburgh Coal Producers' association, states that general stocks on hand, together with the daily production from nonunion mines are sufficient for at least three months. He says that as nonunion production increases with the return of more men, the supply will be enlarged so that the iron and steel industry may discount the possibility of a severe coal shortage.

It is reported by the United Mine Workers that the Pennsylvania railroad has 10,300 cars of coal stored on sidetracks between here and the West Virginia line, a two weeks' coal supply to operate the railroad's trains in this territory.

In the meantime, coke prices have advanced. As high as $4.25 has been paid for furnace fuel and $5.25 for foundry coke. Prices of coal generally are unchanged, although some gas and by-product coal has been sold at 25 to 50 cents per ton higher than at the beginning of the strike.

The result of a comprehensive survey of operating conditions on Monday among the nonunion mines of the Pittsburgh, Connellsville, West Virginia and West Moreland districts are embodied in the following report, giving the location of the mines in their relation to the railroads serving them:

Monongahela railway, mines working: Isabella 10 per cent; Poland No. 3, Dunkard, Jeanette, Laural Run, Brier Hill, about 20 per cent; Dearth, Hoover and Lambert, 10 per cent. All operations are located on the Pennsylvania railroad. Mines idle: McKeefry, Donalds, Griffin No. 1 and No. 2, Mt. Sterling, Stella, Winona, Ronco, Gates, Palmer, Edenborn, Lockrone, Footdale, Buffington, Maxwell, Bridgeport, Alicia, Luzerne, Husted, Seamans, Blackstone, Century, Brownville Coke Co., Sharpnack, Garwood, Catherine, Allison 1 and 2, Republic, Tower Hill 1 and 2, Thompson 1 and 2, Orient, Herbert, Taylor and Puritan. These are all located in Pennsylvania. All mines in West Virginia are idle except the Almina.

Pennsylvania railroad, Westmoreland-Irwin-Connellsville fields: Yukon and Klondike mines on southwest branch are idle and the railroad company reports that all of the nonunion mines are more or less affected and that it will not be surprised to see 75 per cent of them idle within the next 24 hours.

Redstone branch, Brownsville to Uniontown: All operations started work Monday morning with the exception

of Royal, American No. 1 and Lincoln, but the railroads report that they will not be surprised to see large increases to the idle list within the next 24 hours.

P. M. & S. and Ten Mile branch, west bank of Monongahela river, Brownsville to Nemicolin: All mines idle except the Mather and Crucible, the latter operating by the river only. This adds the Nemicolon, Youngstown Sheet & Tube Co. operation to the idle list.

Baltimore & Ohio railroad: Nonunion mines, Westmoreland and Connellsville fields, working about 75 per cent, Mt. Braddock mines and ovens, W. K. Ranney operation, and Oliver Snyder Co. mines and ovens have been added to idle list.

Pittsburgh & Lake Erie: All mines down except the Washington Coal & Coke and Jamison operations.

The general feeling reported in Pittsburgh Monday among operators and railroad officials was that the union officials gained considerable ground over Sunday and that several mines in addition to the foregoing will be added to the idle list within the next 24 or 48 hours. They do not think this is permanent, but rather that the men are quitting through fear and will come back slowly.

Government Continues a Hands-off Policy

Washington, April 11.—The end of the first 10 days of the coal strike finds the administration still adhering to its policy of noninterference. There is no indication of any disposition to try to force operators into conference with the miners. So long as the railroads remain open and utilities are not endangered the administration will keep its hands off. The feeling is that the miners have lost the first round, as they have appeared most anxious to bring the operators into conference, and the house labor committee's proposal has been turned down flatly by the operators.

The geological survey estimates the output of the nonunion bituminous mines in the first seven days of the strike at 3,500,000 tons. In the first week of the 1919 strike, in the winter season, the nonunion mines produced 3,582,000 tons. The National Coal association states:

"Thousands of cars of coal are standing on the mine sidings and in railroad yards awaiting billing orders from consumers. In the union fields the factor limiting production is, in general, the strike, but in the nonunion fields the limiting factor continues to be the lack of orders, as for many weeks past."

The house labor committee has concluded its hearings on the Bland coal commission bill and is expected to submit in its report a detailed statement of the coal situation as viewed through its eyes—which to date have had a deep pro-labor tinge. Talk is recurring of limiting the future development of the bituminous coal industry, and of grouping mines by regions, but it seems probable that such proposals will receive scant serious attention at least until the present strike is settled.

Furnace Operations in the Valley Reduced

Youngstown, O., April 11.—With the banking of the No. 2 Haselton stack of the Republic Iron & Steel Co. blast furnace operations in the Mahoning valley have been reduced from 50 to 46 per cent representing 13 active stacks. Pending the outcome of the present coal strike orders for blowing in the Struthers stack of the Struthers Furnace Co., the Mary furnace of the Sharon Steel Hoop Co. and No. 6 furnace at the Ohio works of the Carnegie Steel Co. have been canceled. Additional operations in the Sharon district including the resumption of 11 open hearths, the blooming and bar mills and three blast furnaces at the plant of the Carnegie Steel Co., Farrell, Pa., also have been postponed temporarily.

A new high rate for sheet mill operations during the past two years is being maintained this week. Operations are 84 per cent of capacity, an increase of 8 per cent over last week. Sheet mills under schedule include 19 Brier Hill Steel Co., 15 Youngstown Sheet & Tube Co., 13 Trumbull Steel Co., 10 Newton Steel Co., nine Sharon Steel Hoop Co., eight each Republic Iron & Steel Co. and Falcon Steel Co., and seven Mahoning Valley Steel Co. Independent open-hearth schedules of last week remain unchanged with 80 per cent of capacity engaged.

Other activities in the Mahoning valley include the 84-inch plate mill of the Brier Hill Steel Co.; 32 hot tin mills and 100 per cent strip operation at the Trumbull Steel Co.; nine pipe mills, the wire and rod departments and the bessemer plant at the Youngstown Sheet & Tube Co.; and five pipe furnaces, a skelp and plate mill at the Republic Iron & Steel Co.

Chicago Increases

Chicago, April 11.—Finishing operations by steel mills at Chicago continue to increase. The plants of the Illinois Steel Co. are operating at 80 per cent of capacity, while the Gary plant is producing at 88 per cent. Bar mills at this plant are running full. One blast furnace stack has been blown in at South Works, giving 17 stacks now active out of 27. Inland Steel Co. continues engaged at 60 per cent of capacity.

Replogle Steel Acquires Empire Steel & Iron

Empire Steel & Iron Co., one of the leading merchant pig iron producers of the East, has been acquired by the Replogle Steel Co., according to an announcement April 8 by J. Leonard Replogle, chairman of the latter company. As a result, the Replogle Steel Co. now has a total pig iron producing capacity of approximately 600,000 tons of basic, bessemer, foundry and gray forge grades per year. In addition to the two rebuilt Replogle furnaces at Wharton, N. J., the consolidation comprises two Empire furnaces at Catasauqua, Pa., one at Macungie, Pa., one at Topton, Pa., and one at Oxford, N. J., making a total of seven stacks for the enlarged company.

The Empire company also has extensive reserves of iron ore. The Replogle mine at Wharton and the Hibernia mine at Hibernia, N. J., together with the mine at Mount Hope, N. J., of the Empire Steel & Iron Co., are estimated to contain more than 150,000,000 tons of iron ore. The Replogle and Mount Hope mines are equipped with modern concentrating plants. In addition, the consolidation includes an iron ore tract in Berks County, Pa., which has not been developed. Limestone will be obtained from the Replogle quarry at Ogdensburg, N. J., which has an annual capacity for producing 200,000 tons.

By the purchase, the Replogle company acquires the Mount Hope Mineral railroad which connects the Mount Hope mine with trunk line railroads. The company already owned the Wharton & Northern railroad which transports ore from the Replogle mine to the furnaces at Wharton. Included in the consolidation is the Victoria Coal & Coke Co. owned by the Empire Steel & Iron Co. The Victoria company owns about 1500 acres of coal land and 135 beehive coke ovens at Caperton, W. Va., and has annual capacity for producing 120,000 tons of coal and 35,000 net tons of coke.

Leonard Peckitt, president of the Empire Steel & Iron Co. will become president of the Replogle Steel Co. The company plans to light its two rebuilt furnaces at Wharton, N. J., as well as the enlarged stack at Catasauqua, Pa., in the near future.

Byron Clark Jr. has been appointed receiver for the Ajax Tool Co., Inc., 25 Warren street, New York with a bond of $1000.

Steel Rail

Output in 1921 Shows Sharp Decrease Over Previous Year

Production of steel rails in 1921 totaled 2,178,818 gross tons, according to figures compiled by the American Iron and Steel institute. As compared with 2,604,116 gross tons made in 1920, the 1921 output shows a loss of 425,298 tons or approximately 16.3 per cent. In the accompanying table, compiled by the institute, is shown the production of rails by processes from 1907 to 1921, inclusive.

Based upon the porcesses of manufacture, 2,027,215 tons was of open-hearth steel, 55,559 tons was bessemer, 96,039 tons was rerolled from old rails and 5 tons was electric steel. Reduced to a percentage basis the open-hearth steel represented approximately 93.04 per cent, bessemer 2.55 per cent, and all other 4.41 per cent. The corresponding figures for 1920 were open-hearth 89.63 per cent, bessemer 5.49 per cent, and all other 4.88 per cent. It may be noted that rails made by the open-hearth process show a decrease of 13.15 per cent while bessemer rails showed a loss of 61.12 per cent, and all other 24.37 per cent. The output of bessemer rails in 1920 was the smallest in history.

During 1921, 22 steel mills engaged in the rolling or rerolling of rails. Of this number 16 used the open-hearth process, five the bessemer and one the electric. Of the entire number seven mills produced renewed or rerolled old rails. Graded according to weight per yard, 211,568 tons were 45 pounds, 214,936 tons were between 45 and 85 pounds, 902,748 tons were between 85 and 100 pounds and 849,566 tons were over 100 pounds. Of the total tonnage of rails produced during the year 6276 tons were alloy treated, 2804 tons being treated with titanium and the balance 3472 tons, by manganese. All of this was made by the open-hearth and electric processes. It is interesting to note that the alloy-treated rails fell to less than half the 1920 tonnage of 12,909 tons which had more than doubled itself over the 1919 figure of 6476 tons.

Production of Rails by Processes

Gross tons

Years	Open hearth	Bessemer	Rerolled*	Electric	Iron	Total	Alloy treated
1907	252,704	3,380,025	.....	.....	925	3,633,654	
1908	571,791	1,349,153	.....	.....	71	1,921,015	
1909	1,256,674	1,767,171	.....	†	.....	3,023,845	
1910	1,751,359	1,884,442	.....	†	230	3,636,031	
1911	1,676,923	1,053,420	91,751	462	234	2,822,790	153,989
1912	2,105,144	1,099,926	119,390	3,455	.....	3,327,915	149,267
1913	2,527,710	817,591	155,043	2,436	.....	3,502,780	59,519
1914	1,525,851	323,897	95,169	178	.....	1,945,095	27,937
1915	1,775,168	326,952	102,083	.....	.....	2,204,203	24,970
1916	2,269,600	440,092	144,826	.....	.....	2,854,518	28,562
1917	2,292,197	533,325	118,639	.....	.....	2,944,161	16,535
1918	1,945,443	494,193	101,256	.....	.....	2,540,892	3,111
1919	1,893,250	214,121	96,422	50	.....	2,203,843	6,476
1920	2,334,222	142,899	126,698	297	.....	2,604,116	12,909
1921	2,027,215	55,559	96,039	5	.....	2,178,818	6,276

*Rerolled from old steel rails. Included with bessemer and open-hearth steel rails from 1907 to 1910, inclusive. †Small tonnages rolled in 1909 and 1910 but included with bessemer and open-hearth rails for these years.

Basing Point Hearing on Same Testimony Trend

Chicago, April 11.—Evidence before the federal trade commission relative to the steel industry's practice of selling steel based on Pittsburgh continues along much the same line as at Milwaukee and Minneapolis. The general tenor of witnesses is that competition by Chicago and other western users of rolled steel is considered limited by being forced to pay freight from Pittsburgh and then meeting competition of Pittsburgh manufacturers.

A. T. Scannell, owner and manager of the Archer Iron Works, which formerly manufactured industrial cars, stated that as the greater market for such vehicles is in the East, his company has been forced to abandon this line of production.

A. G. Vierling, assistant secretary for the Vierling Steel Works, said his company is completely cut out of eastern and southeastern markets.

G. W. Cardinal, vice president and treasurer of the Fitzsimons Steel & Iron Co., Milwaukee, stated that his company is under a handicap in Milwaukee against Pittsburgh competitors when Pittsburgh plus is in effect. He went further in stating that the Milwaukee manufacturer is under a handicap at practically every point in this country when the basing practice is observed.

W. H. Stackhouse, a partner in French & Hecht, with plants at Davenport, Iowa, and Springfield, O., stated that the Springfield plant enabled him to compete for business which would be entirely inaccessible to the Davenport plant.

Steel Ingots

Of 2,370,751 Tons in March Highest Since November, 1920

Steel ingots produced during March totaled 2,370,751 gross tons, according to statistics compiled by the American Iron and Steel institute from production figures of 30 companies, which in 1920 made 84.2 per cent of the total for the United States. Compared with the revised output of 1,745,022 tons in February, the March total was a gain of 625,729 tons and is the largest increase made in any month since production has shown recovery. For the first time in 14 months, production was over the 2,000,000-ton level and was the highest since November, 1920 when the total was 2,638,670 tons. The March output stands 195 per cent higher than the 803,376-ton low point of last July.

Following are the institute's production figures for all of 1921 and the first three months of 1922:

1921	Open hearth	Bessemer	All other	Total
Jan....	1,591,281	608,276	3,629	2,203,186
Feb....	1,295,863	450,818	2,796	1,749,477
Total for year	4,062,735	1,452,077	8,829	5,523,641
March..	1,175,591	392,983	2,404	1,570,978
April...	1,000,053	211,755	2,150	1,213,958
May....	1,047,810	216,497	1,543	1,265,850
June....	808,286	193,644	1,476	1,003,406
July....	689,489	113,312	575	803,376
Aug....	915,334	221,116	1,621	1,138,071
Sept...	908,381	265,152	1,207	1,174,740
Oct....	1,269,945	345,837	1,028	1,616,810
Nov...	1,294,371	363,912	1,718	1,660,001
Dec...	1,129,174	296,380	1,539	1,427,093
Total for year.	13,125,578	3,679,682	21,686	16,826,946
1922				
Jan....	1,260,809	331,851	822	1,593,482
Feb...	1,395,835	348,571	616	1,745,022
March..	1,918,570	451,385	795	2,370,751
Total for year.	4,575,214	1,131,808	2,233	5,709,255

The average daily production of the 30 companies in March was 87,805 tons, which compared with the revised rate of February of 72,709 tons, was a gain of 15,096 tons. The indicated average daily basis for the entire country was 104,281 tons, as compared with 86,352 tons during the preceding month, the increase being 17,929 tons and approximately 20.8 per cent.

Based upon the average daily output for March and 311 working days per year the approximate annual rate of production for the 30 companies for the month was 27,300,000 tons and was 4,690,000 tons better than the 22,610,000-ton rate of February. The annual rate for the whole country as indicated by the March output was approximately 32,430,000 tons, as compared with 26,850,000 during the preceding month, the increase being 5,580,000 tons.

This was approximately 67 per cent better than the indicated average rate of the whole country in 1921, which according to the institute's figures was approximately 20,000,000 tons.

British Output at 67 Per Cent

Production of Iron and Steel Increases Despite Lockout of Machinists—Canadians Reported To Have Placed Order for 250,000 Boxes of Tin Plate at $3.98 f.o.b.—German Prices Advanced Again—Offers for Scrap Are Low

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON April 10.—Production in British iron and steel industry has increased, despite the lockout of machinists. The output of pig iron in March amounted to 385,000 tons as compared with 300,100 in February, 288,000 tons in January and 275,000 tons last December. One hundred and six stacks were in operation on the last day of March.

Production of steel in March amounted to 540,000 tons as compared with 415,000 tons in February, 330,000 tons in January and 381,000 tons in December.

These figures show that operations generally are 67 per cent of the maximum rate as attained in 1917.

Market support is coming mainly through export business. Prices of finished steel are fairly firm while the situation in tin plate has improved considerably, some mills now being booked full through June.

Sterling—$4.42

An important split has occurred among the unions involved in the engineering trades dispute. The foundrymen and general workers' organizations and 45 other unions have accepted the employers' terms for a renewal of negotiations, leaving the machinists to fight their battle alone. The shipbuilders have voted against accepting a wage reduction, although only a third of the membership of their organization voted.

It is reported that a Canadian order for 250,000 boxes of tin plate has been booked for third quarter shipment at 18 shillings ($3.98) per box f.o.b. British makers are asking £16 10s ($72.93) per ton for galvanized sheets, and they consider the market strong enough to re-establish their pool, eliminating competition. The first cargo of British coke for Boston is reported to have been closed at Newcastle.

German prices have been advanced again by 1300 marks ($4.68) per ton for pig iron, 2000 marks ($7.20) for semifinished and 2500 marks ($9.00) for finished steel. The Germans can well afford to offer $16, Hamburg, for scrap, as their home supplies have advanced to $25, on current exchange. The scrap shortage in Germany is growing.

Steel Trade More Active; Export Orders Booked

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

BIRMINGHAM, Eng., March 31.—The machinists' lockout has spread and is being felt more keenly in the iron and steel trade. The stoppage of shipbuilding has checked the demand upon the mills for material. Several ships which were in course of construction on the Tyne and Clyde have been sent to the Continent for completion. The principal effect is experienced in the pig iron department.

A peculiar development is the transfer of a portion of foreign business from Cleveland to the Midland area where foundry iron can be bought at least 7 shillings 6 pence ($1.64) lower than in the northeastern exporting district. Within the past few days a large smelting concern with headquarters in Birmingham and furnaces in Northampton has negotiated pig iron business with Australia and Japan. The reduced value of the mark has added an obstacle to shipments to Germany, which have been a feature of the Cleveland business for some time. The competitive position with the West coast is peculiar just now, the latter district delivering its high class iron into Sheffield at a price only 4 shillings ($0.89) above that of the East Coast iron.

Sterling—$4.37

On the West Coast the additional furnaces put in blast recently have been kept in operation, but as the lockout seriously affects that important engineering and shipbuilding center some curtailment of production appears to be inevitable.

The steel trade is withstanding the lockout much better than was anticipated. Semifinished values have been increased. It appears to be impossible to buy Welsh billets in Birmingham under £7 10s ($32.77), and some sellers are asking £7 12s 6d ($33.31). One development is the stoppage of the Port Talbot steelworks, employing about 1500 men, and owned by Baldwins, Ltd.

The rerollers now have found it necessary to raise their prices by 5 shillings ($1.09) per ton in consequence of the rise in semifinished steel, rerolled bars being quoted at £9 10s ($41.52) instead of £9 5s ($40.43).

More heavy wage reductions in the iron trade go in effect April 3. In the North of England the reduction is 20 per cent, leaving the percentage above the standard 47½, as compared with 225 per cent in January, 1921. This series of sweeping cuts, more drastic than in any other trade, have been effected without the slightest labor disturbance, due to the operations of the wage boards. The Midland board has decreed a cut of 27½ per cent for the next two months. This leaves the men here 62½ per cent above the standard as against 47½ in the North.

Prices are tending to spread in the iron trade, some makers getting £12 ($52.44) for unmarked bars, whereas merchants claim to be able to buy at £11 7s 6d ($50.20).

Among the cheerful signs in a rather gloomy period are the continued arrivals of large foreign contracts. It is announced this week that Sir William Arrol & Co., of Glasgow have the contract for building and equipping a large workshop at Enugo, for the Nigerian state railways. Other business expected to reach Glasgow is to be given out by the Roumanian state railways, and the locomotive builders of the Clyde city expect to get a share of the rolling stock orders available.

Current Iron and Steel Prices of Europe

British Market

Home Market Prices. Gross Tons at Works or Furnace

Corrected to Date by Cable

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	32.05	7 5 0
Sheet bars	30.94	7 0 0
Wire rods	41.99	9 10 0
FINISHED STEEL		
Steel bars, England, ¾ to 3-inch	39.78	9 0 0
Plates, ship, bridge and tank, England	41.99	9 10 0
Plates, ship, bridge and tank, Scotland	41.99	9 10 0
Beams, England	41.99	9 10 0
Beams, Scotland	41.99	9 10 0
Sheets, black, 24 gage	46.96	10 12 6
Sheets, galvanized, 24 gage	71.83	16 5 0
Rails, 60 lbs. and over	35.36	8 0 0
Tin plate, base box, 108 lbs.	4.31	0 19 6
Steel hoops	48.62	11 0 0
Steel hoops, for export	45.31	10 5 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	21.77	4 18 6
Hematite, West Coast, Mixed Numbers	21.77	4 18 6
Middlesbrough Basic	19.89	4 10 0
No. 3 Foundry, Middlesbrough	19.89	4 10 0
No. 3 Foundry, Derby, Leicester, Nottingham	18.23	4 2 6
No. 3 Foundry, Northamptonshire	17.68	4 0 0
No. 3 Foundry, Staffordshire	18.79	4 5 0
No. 3 Foundry, Scotch	20.44	4 12 6
Ferromanganese, 76 to 80 per cent	66.30	15 0 0
Ferromanganese, 76 to 80 per cent, for export	62.99	14 5 0
COKE		
Yorkshire furnace	4.20	0 19 0
Yorkshire foundry	6.63	1 10 0

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Marks per metric ton
PIG IRON		
Hematite, Oberhausen	27.23	7564
Foundry, No. 3, Oberhausen	24.38	6773
Bessemer Stahleisen, Siegen	20.55	5709
COKE		
Ruhr furnace	3.16	878
Ruhr foundry	3.29	913
SEMIFINISHED STEEL		
Billets	28.08	7800
Sheet bars	31.14	8650
Wire rods	28.98	8050
FINISHED STEEL		
Standard rails	33.48	9300
Merchant bars	36.00	10,000
Structural shapes	37.08	10,300
Ship plates	38.16	10,600
Medium plates, 3 to 5 millimeters	41.76	11,600
Sheets, below 3 millimeters	44.55	12,375
Tin plate	95.40	26,500
Plain wire	40.32	11,200
Bands and strips	41.40	11,500

All prices are f.o.b. furnace or mill.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	22.32	350
Basic Bessemer, Lorraine	23.55	255
Foundry, Longwy, No. 3, sand-cast	22.16	240
Foundry, Longwy, No. 3, chill-cast	23.55	255
Foundry, Longwy, No. 2, sand-cast	.....	...
Foundry, Longwy, No. 2, chill-cast	.....	...
Ferromanganese, 76 to 80 per cent	87.27	945
COKE		
French furnace	9.97	108
German furnace, f.o.b. frontier	8.31	90
French foundry	12.01	130
SEMIFINISHED STEEL		
Blooms	31.86	345
Billets	33.71	365
Sheet bars	34.63	395
FINISHED STEEL		
Standard rails	50.79	550
Merchant bars	43.40	470
Angles	43.87	475
Normal beams and profiles	43.87	475
Plates, ship and tank, 10 millimeters and thicker	59.10	640
Plates, bridge and tank, 5 to 10 millimeters	63.26	685
Sheets, black, 3 millimeters	72.49	785
Sheets, blue annealed, 2 millimeters	87.73	950
Shafting, cold-drawn, 40 to 60 millimeters	76.19	825
Bars, 2 per cent nickel steel	101.59	1100

All prices are f.o.b. furnace or works.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	20.12	235
Basic open-hearth, Belgian	20.97	245
Gray forge, Belgian	20.12	235
Foundry, No. 3, Belgian	20.97	245
Foundry, No. 3, Luxemburg	20.97	245
Foundry, No. 3, Lorraine	21.40	250
SEMIFINISHED STEEL		
Blooms	26.96	315
Billets	27.82	325
Sheet bars	29.53	345
Wire rods	41.52	485
FINISHED MATERIAL		
Standard rails	35.10	410
Merchant bars	35.95	420
Normal beams and profiles	32.53	380
Plates, 5 millimeters and thicker	40.66	475
Sheets, black, 3 millimeters	42.37	495
Sheets, galvanized, 1 millimeter	117.70	1375
Plain wire	57.78	675
Galvanized wire	70.19	820
Wire nails	41.09	480

All prices are f.o.b. furnace or works.

The present position in South Wales has improved very much during the past week. A marked increase is noted in foreign inquiry, eastern buyers of tin plate coming forward in larger numbers, while Spain, Portugal and South America, are in the market. Home buyers are placing orders with more confidence. The trade is now working to about 60 per cent of capacity. There is increasing evidence that stocks in all parts of the world are very low.

Steelmakers have refused to reduce bars below £7 7s 6d ($32.22), although for weeks great pressure was brought to bear. Tin plate prices are rather firmer at 19 shillings ($4.15) to 19 shillings 2 pence ($4.12) per box.

The sheet trade is more satisfactory. Makers are maintaining prices at £16 ($69.92), f.o.b. and the inquiry on export account shows a marked improvement.

Beam Prices Are Reduced by Comptoir

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
224 Rue de Rivoli,

PARIS, March 31.—The reorganized Comptoir Siderurgique will confine its activities to the sale of rails and structural shapes. It includes practically all manufacturers of these products in France. Semifinished products will not be dealt with by the comptoir for the time being. The comptoir's first step was to bring back the price of heavy beams from 485 francs ($43.65) to 475 francs ($42.75) per metric ton.

Franc—$0.09

This action was prompted by the continued fall in value of the German mark, and to cope with foreign competition.

A new company incorporated under the name of Longovica also has been formed with the object of furthering the export business of its constituents. This company will concern itself principally with the foreign sales of cast iron, iron, raw and manufactured steel, bolts and nuts, wire and wire rope, railway material, material for mines, pipe, motors, pumps and ventilators, and all kinds of materials for public works. The capital of the company is 20,000,000 francs ($1,800,000).

The Societe Metallurgical de Sambre et Moselle is said to have secured an order for 1250 tons of rails from the Parana railway company in Brazil.

General market conditions show little change; prices are somewhat easier; demand is weak. German competition is becoming keener with the depreciation of the mark, and English products continue to find their way into France. These conditions are causing uneasiness in certain quarters and the question of increasing the tariff on certain commodities has again arisen for consideration.

Middlesborough pig iron in 200-ton lots has been offered at the exceptionally low price of 210 francs ($18.90) f.o.b. Rochefort, duty paid; no reference being made as to quality. English hematite has been offered at 310 francs ($27.80) delivered, French frontier.

The Comptoir des Toles has announced a reduction of 20 francs ($1.80) per metric ton for plates 10 millimeters and thicker; 25 francs ($2.25) for 5 to 10 millimeter plates; 35 francs ($3.15) for 3 millimeter sheets and 100 francs ($8.50) for the lighter gages.

Belgians Underbid Germans on Rails

European Staff Correspondence

BRUSSELS, March 31.—Buyers have been postponing orders in view of the fact that present wage agreements end April 1. For some time a reduction of 20 per cent has been considered. In an address by M. Trasenster, president of the Groupe des Hauts Fourneaux et des Acieries Belges to the national commission of metallurgy which assembled March 22 at the ministry of labor, he stated that a cut of 20 per cent in wages would be made April 15, fixing a minimum rate of 1.50 francs ($0.13) an hour or 12 francs ($1) for an 8-hour day. It has been rumored in certain quarters that no reduction in excess of 4 francs ($0.35) a day will be made and that this reduction will be effected in two

Franc—$0.085

stages: 10 per cent on May 1 and 10 per cent on June 1. Wages in Belgium, particularly in the mining districts, are now higher than either in France or in England, and unless this condition is corrected a number of plants will be required to close.

Exporters are laboring under the greatest difficulties. The English market continues to be practically closed to Belgian products and although a small amount of business is being transacted with France it is not sufficient to alleviate the situation. However, the recent 4000-ton rail order for Bulgaria was secured by la Providence at a price 14 per cent under that of the next lowest bidder, Krupp. Thirteen Belgian firms recently competed against each other for a tonnage of rails for Brazil.

The pig iron market remains stationary. Demand for semifinished steel has slightly increased, thus checking the downward movement in prices. The price of standard beams is somewhat firmer. Ougree-Marihaye have increased their price 10 francs ($0.85) per metric ton. In the plate and sheet department the outlook is far from encouraging. Several orders have been cancelled and transferred to English mills. German mills are offering 5-millimeter plates at 420 francs ($5.50) as compared to the present domestic price of 480 francs ($40.80).

Japanese Pig Iron Market More Active

Special Correspondence

TOKIO, Japan, March 31.—Fair buying is in evidence in the iron and steel trade here and prices are well maintained. Settlement of accounts at the end of February was effected satisfactorily; holders of pig iron have recovered confidence a little, and business is reviving. Consumers, show greater readiness to buy. A larger volume of business is expected toward the close of the month.

No. 1 Japanese pig iron is quoted at 72 yen ($34.56) per ton; No. 2, 67 yen ($32.16); No. 3 63 yen ($30.24); No. 1 Hanyang (Chinese) 67 yen ($32.16); No. 1 Tata (Indian), 62 yen ($29.76); No. 3 Cleveland, 80 yen ($38.40).

Although at first the importation of low priced Indian iron was generally expected to be small it is now proving

Yen—$0.48

large and important. The visible stock of pig iron in Japan on March 3 was estimated roughly at 220,000 tons, this being an increase of 6000 to 7000 tons over the figure a month previously.

Steel stocks also are increasing. At the beginning of January the total fell below 100,000 tons and the market was freed of anxiety. But much cargo has been imported. The official trade return for February shows that the value of steel rods, bars, plates and sheets imported in the first two months this year amounted to 22,008,000 yen ($10,563,840) against 20,062,000 yen ($9,629,760) in the same period of 1921. Steel stocks at present are believed to be much above 100,000 tons. The government steel works is endeavoring to check imports by accepting orders at a discount. Sheets and bars are in fair demand, but little is being done in other lines. Round bars are quoted at 4.80 yen ($2.30) per 10 kwamme; flat bars, 5.30 yen ($2.54); square bars, 5.20 yen ($2.49); Sheets 8 yen ($3.84) and plates; 4.50 yen ($2.16) per 10 kwamme. Ten kwamme equal 82.67 pounds.

John L. Lyttle, New York, trustee of the bankrupt estate of the Worcester Abrasive Co., Inc., Worcester, Mass., and New York, will sell the property at auction in Worcester, April 17. Harold S. Holmes was president and treasurer of the company, which is a New York corporation.

Report Revised Tariff in Senate

Based on Foreign Valuation, Rewritten Fordney Bill Is Submitted by Finance Committee—Protection Lower—Expected To Be Called Up Shortly—Strenuous Fight Both on Floor and in Conference Looked For

WASHINGTON, April 11.—Rewritten entirely on the basis of foreign valuation, the Fordney permanent tariff bill was reported back to the senate late today by the senate finance committee. In few instances has the committee increased the rates on strictly iron and steel articles. The protection on alloy steels has been increased while ferromanganese, which in the house version of the Fordney bill carried a rate equivalent to $39 a ton, has been cut to the level of the Payne-Aldrich tariff, $2.50 a ton. In many cases the senate has not revised the house rates, which is equivalent to a reduction because the house took as its basis American valuation. The senate and house versions, compared with the present Underwood tariff, are shown in the accompanying table.

It is the intention of Chairman McCumber of the senate finance committee, to call the bill up for action not later than April 21. The best estimate is that the bill will be before the senate at least 60 days, to say nothing of the conference with the house which will ensue. The bill has been before the senate committee since last July 22. Despite the protests of the house ways and means committee, American valuation has been wholly rejected.

The basis of the ad valorem duties is the "foreign value or the export value, whichever is higher," the basis of ad valorem duties for more than 50 years with the exception of the emergency agricultural tariff. Provision has been made, however, that the President, without the consent of congress may transfer the foreign valuation to the American wholesale selling price of the imported goods and increase or decrease the rates 50 per cent on similar articles to meet peculiar situations. Provision also has been made for the prohibition by the President of imports by cartels or associations aiming to control the price within the United States. The depreciated currency provision inserted by the house has been stricken out by the senate committee.

Not only has the senate finance committee reduced the duty on ferromanganese to $2.50 a ton, but also it has made 30 per cent manganese content the dividing line between spiegeleisen and ferromanganese, whereas the house made it 45 per cent.

Manganese ore has been put back on the free list, along with chrome and iron ore. The rates on ferrosilicon have been lowered substantially. Pig iron remains at $1.25 a ton, but scrap has been reduced 25 cents a ton to $1. Manganese ore was denied the 1-cent a pound duty accorded by the house because the evidence did not justify an additional burden of $8,000,000 annually upon the steel industry when the information did not indicate a supply in the United States to provide for the needs of the industry more than four years and that supply of a low grade, it is explained by the committee. Both the contest on the floor of the senate and later in conference with the house loom formidable. Senator La-Follette of Wisconsin, alone has some 100 amendments that must be considered separately. House leaders reassert their unwillingness to consider any tariff bill not based upon American valuation.

Metals Section of Tariff as Proposed

	Fordney bill as reported—By senate	Fordney bill as reported—By house	Underwood act of 1913
Pig iron	$1.25 ton	$1.25 ton	Free
Scrap iron and steel	$1 ton	$1.25 ton	Free
Spiegeleisen*	$1.25 ton	$1.25 ton	Free
Ferromanganese†			
1 per cent carbon	$2.50 ton	2½c lb. manganese content	.....
1 per cent carbon or less	20 per cent	2½c lb. manganese content and 28 per cent	.....
Manganese ore	Free	1c lb. mang. content	Free
Ferrosilicon	.....	.....	15 per cent
8 to 60 per cent silicon	2c lb. sil. content	.....	.....
60 to 80 per cent silicon	3c lb. sil. content	3½c lb. sil. content	.....
80 to 90 per cent silicon	4c lb. sil. content	4c lb. sil. content	.....
Over 90 per cent silicon	8c lb. sil. content	8c lb. sil. content	.....
Molybdenum ore or concentrates	75c lb. molybdenum content	75c lb. molybdenum content	15 per cent
Tungsten ore or concentrates	45c lb. tungsten content	45c lb. tungsten content	.....
Ferromolybdenum and all compounds and alloys	$1 lb. molybdenum content and 15%	$1.25 lb. molybdenum content and 17%	.....
Ferrotungsten and all compounds	60c lb. tungsten content and 25%	72c lb. tungsten content and 15%	.....
Steel ingots, blooms, slabs, billets, shafting, steel castings, sheets and plates	2/10c lb. to 25%	2/10c lb. to 20%	15 per cent
On steel circular saw plates additional	duty in every case		¼c lb.
Boiler plate, skelp	7/20c lb. to 20%	7/20c lb. to 20%	.....
Black iron and steel sheets and iron or steel scrap	45/100c lb. to 20%	45/100c lb. to 20%	12 per cent
Galvanized sheets, plates, bars, rods, etc	2/10c lb. extra	2/10c lb. extra	15 per cent
Tin and terne plate	1c lb.	1 1/10c lb.	15 per cent
Structural material not assembled	7/20c lb.	7/20c lb.	.....
Structural material machined, punched, drilled, assembled, fabricated, etc.	30 per cent	25 per cent	.....
Hoop, band and scroll	25/100c lb. to 35%	25/100c lb to 20%	10 per cent
Cotton ties	¼c lb.	¼c lb.	10 per cent
Wire rods	3/10c to 6/10c lb.	3/10c to 6/10c lb.	.....
Round iron or steel wire	¾c lb. to 35%	¾c lb. to 20%	15 per cent
Galvanized wire (extra)	2/10c lb.	2/10c lb.	Free
Iron, steel anchors	30 per cent	25 per cent	12 per cent
Ball bearings and rollers	10c lb. and 55%	10c lb. and 35%	35 per cent
Railway fish-plates, splice bars	¼c lb.	¼c lb.	10 per cent
Steel rails	7/40c lb.	7/40c lb.	Free
Axles, bars, blanks, forgings	6/10c lb.	6/10c lb.	10 per cent
Cast iron pipe	20 per cent	10 per cent	10 per cent
Lap and buttweld pipe, tubes, etc.	¾c to 1¾c lb.	¾c to 1¾c lb.	20 per cent
Iron and steel chain	1c to 4c lb.	1c to 4c lb.	20 per cent
Nuts, washers, of wrought iron, steel	6/10c lb.	6/10c lb.	.....
Bolts and bolt blanks	1c lb.	1c lb.	.....
Cut nails and spikes	4/10c lb. to 30%	4/10c lb. to 20%	Free
Rivets, studs, etc	40 per cent	25 per cent	20 per cent
Steel wool	10c lb.	10c lb.	20 per cent
Wood screws	3c to 10c lb.	3c to 10c per gross	.....
Scientific instruments	55 per cent	40 per cent	.....
Machine tools and parts	35 per cent	35 per cent	15 per cent
Aluminum, scrap and alloys	5c lb.	5c lb.	2c lb.
Copper in rolls, rods, sheets	2½c lb.	2½c lb.	5 per cent
Brass rods, sheets, plates, etc.	4c lb.	4c lb.	5 per cent
Quicksilver	25c lb.	35c lb.	.....
Nickel oxide	1c lb.	5c lb.	10 per cent
Tin in bars, blocks or pigs	Free	2c lb.	Free to 4c lb.
Lead bearing ores	1½c lb. lead cont.	1½c lb. lead cont.	¾c lb. lead cont.
	Free to 1½c lb.	Free to 1½c lb.	10 per cent
Zinc bearing ore	zinc content	zinc content	on zinc content
Magnesite	5/16c to 4/10c lb.	½c to ¾c lb.	Free
Fluorspar	$5.60 ton	$5 ton	$1.50 a ton
Graphite	10 per cent to 2c lb.	10 per cent	Free

*In the senate bill spiegeleisen contains 30 per cent or less manganese, against 45 per cent in the house bill.

†In the senate bill ferromanganese contains 30 per cent or more manganese, against 45 per cent in the house bill.

Coast Building Rate Gains

Residential Construction Increases $458,260 Over February—Corporation Raises Price of Sheets $3 a Ton—Plate Demand Stronger

SAN FRANCISCO, April 8.—General business conditions in this section gradually are improving Building permits in San Francisco for March totaled $3,289,251, an increase of $458,260 over February, 1922 and $530,164 over March, 1921. An analysis of the building permits report shows that residential building continues to lead in the construction activities of the city. Interest in steel circles this week is centered around the announcement made by the Steel corporation today of a $3 per ton advance in the price of blue, black and galvanized sheets.

Pig Iron and Coke

Sales of pig iron during the past week were all of small tonnages and inquiry is meager. The only sale of any size reported was one 500-ton lot of basic for an interest in the southern part of the state. Consumers in this district do not seem to be at all concerned over the coal strike situation and as far as can be ascertained only one interest in the state has covered for second and third quarter requirements. A water rate of $6 per gross ton from Mobile to this port is obtainable. This favors further the sale of southern iron in this territory.

Due to the still low rate of operations among the foundries little of interest has transpired in the coke market, only an occasional carlot is moving.

Bars, Plates and Shapes

Local bar mills have reduced their prices on both merchant and reinforcing bars $4 per ton. Prices in effect April 1 are as follows; merchant bars 2.45c f.o.b. San Francisco, reinforcing material in lots of 200 tons or over 2.40c and in less than 200-ton lots 2.55c f.o.b. San Francisco.

The strengthening of steel prices on higher levels is reflected in cold-drawn material in this district as several makers have announced higher prices will prevail. In the meantime 1.80c base Pittsburgh may be considered the minimum. Demand is not heavy.

A slight improvement is reported in the market for hoops and bands but business is below normal. Consumers are buying only for immediate requirements. The 1.80c price, prevalent three weeks ago, has disappeared and 1.90c base Pittsburgh is the average, while bands are being quoted at 1.80c base. The minimum for large bolts appears to be 70 and 10 off.

A better demand for plates is reported and prices are becoming firmer, 1.75c Atlantic seaboard being the general run. Local shipyards have been asked to submit bids on two ferryboats for the Key route, involving 900 tons of plates and shapes. An inquiry from one of the shipyards calls for 1400 tons. The Standard Oil Co. is asking for bids on 90 station tanks involving 195 tons. The Western Pipe & Steel Co. secured the pipe line for the San Jose water works, 115 tons involved. Bartlett, Hayward & Co., Baltimore are reported to have secured a penstock for Los Angeles involving 1000 tons.

The movement of structural shapes, especially in small lots has been heavy. One interest states that sales during the past month were 100 per cent better than they were in February. Shipyards have issued inquiries for shapes totaling 1500 tons.

Other Finished Material

Following the lead of the independent sheet mill operators in advancing sheet prices the Corporation today announced the following prices; blue annealed 2.40c, black sheets 3.15c and galvanized sheets 4.15c base Pittsburgh. No great amount of buying is reported due to the advances, and the tonnage booked is not as large as was anticipated.

Jahn & Bressi were awarded the general contract for extension of the Seattle municipal railway which involved 500 tons of girder rails, the steel has not yet been placed. The interest in Chihuahua, Mexico, who put out an inquiry for 4400 tons of 56-pound rails recently, closed with the Santa Fe on second hand relaying rails. The American Car Co., St. Louis, was awarded the contract for 20 street cars for the San Francisco municipal railway.

Scrap Material

Due to the large stocks of melting steel in the yards of the local bar mill operators, little activity of late is noted in the heavy melting steel market. Approximately 500 tons moved this week at prices ranging from $9 to $10 a ton delivered. Cast scrap is moving only in small lots.

Improvement in both municipal and private demand for cast iron pipe is noted, and pipe men state March sales were much larger than those for February. Prices have stiffened several dollars a ton due to both an increase in mill prices and freight rates, and $35 base is now considered the general run of the market. On a contractor's letting Shepard & Weber, Santa Monica, Cal. secured approximately 200 tons of 12-inch pipe for Newport Beach. Los Angeles will open bids on April 14 for 1840 tons of 4 and 6 inch. Roseville voted on a bond issue on April 10 for a water works system which will involve 1210 tons of 6 to 14-inch.

Awards Coast Pipe Line; Other Lettings Sizable

Seattle, April 8.—Contract for approximately 14 miles of all riveted-steel pipe as a part of the city's water system was awarded yesterday to Grant Smith & Co., the low bidders whose figure was $1,468,602. Close to 15,000 tons of plate will be used on this job. The pipe line will be manufactured here by the Western Pipe & Steel Co., San Francisco, which has leased a former shipbuilding plant for the purpose. Wood-pipe manufacturers made effort to get the award for five miles of the line but their bid was rejected as no contractor had offered figures for laying this kind of pipe. The board decided that it was impossible to readvertise in view of the advancing price of steel now generally being reported.

Specifications have been sent to Pacific coast shipyards for constructing two steel ferryboats for the Key Route Ferry Co., San Francisco. These vessels are to cost approximately $300,000 each and are to be completed within nine months. Bids will be opened May 1.

Tacoma has purchased 160 tons of 60-pound steel rails from Belgium. The rails will be used on tracks on the port properties. The Oregon highway commission will receive bids on April 14 and 15 for the construction of 215 miles of highway and the erection of eight bridges. The commission will meet at Salem.

The Williamette Iron & Steel Works, Portland, was awarded a contract for furnishing Walla Walla, Wash., with 5000 lineal feet of 20-inch steel pipe at $1.96 per foot. The same city has awarded to the Pacific Coast Paving Co. the contract for a twin reservoir on a bid of $176,851. Cast iron pipe in place of wood has been specified on this job.

Breaks Steel Record

Further production records continue to be made by the Weirton Steel Co., Weirton, W. Va., as previously reported its blast furnace in March produced 23,007.7 gross tons of basic pig iron or at the average daily rate of 742.1 gross tons. In addition, its seven 100-ton open-hearth furnaces produced 49,118 gross tons of ingots as follows: No. 1 7299; No. 2 6389; No. 3 7031; No. 4 7857; No. 5 5015; No. 6 7674; No. 7 7853; or an average production of steel per furnace of 7017 gross tons, notwithstanding the fact that while No. 5 furnace was being rebuilt, it lost 16 days. The claim is made that the previous high record for ingot production per furnace of this size was 6225 gross tons. Other production records were broken at the company's Weirton tin mills both at Weirton, W. Va., and at Steubenville, O.

Genoa and Coal Strike Interest

Foreign Exchange Rates Discount Further European Improvement as International Conference Is Opened—Defections Among Nonunion Miners Cause Apprehension—Signs of Trade Improvement Grow More Unmistakable

BY JOHN W. HILL, FINANCIAL EDITOR

THE present economic situation may be compared to a three ring circus. In one is to be found the many signs of substantial business revival; in another is the coal strike, with the spreading defections among nonunion miners; and in the third is the Genoa conference, where Lloyd George is striving to harmonize the conflicting torrents of national hatreds, suspicions and political maneuvers. The outstanding indications of trade recovery may be placed into four classifications; namely, the improvement in the steel industry, the buying by the railroads, the amazing activity in building construction, and the betterment in agricultural conditions. These are accepted as fundamental factors in the business structure. Improvement in one of them would be gratifying but unmistakeable gains in all leave no doubt that a distinct fundamental change has come.

The Barometer of Business

WEEKLY COMPARISON

	Last Week	Week Before	One Month Ago	One Year Ago	1913
Business failures	562	511	521	322	300
Cash ratio Federal Reserve system, per cent.	77.7	77.8	77.8	52.4	....
Loan rate prime discounts, 4-6 months, New York, per cent.	4½-4¾	4½-4¾	4¾-5	7½-7¾	5½-6
Bank clearings (U. S.) (000 omitted)	$7,254,036	$6,540,552	$6,533,532	$6,287,168	$3,500,000
Average 20 industrial shares (N. Y.)	$87.48	$85.51	$83.67	$73.61	$82.50
Average 40 bonds	$79.14	$77.44	$77.50	$66.88	$93.00
Car loading (week ended March 25)	846,000	823,369	735,286	687,852	*862,709

*1920.

MONTHLY COMPARISON

	March	One Month Before	One Year Ago	1913
Building activity awards in 27 states	$293,636,000	$177,365,000	$164,194,000	*$71,450,000
Business failures:				
Number	2463	2331	1336	*1336
Liabilities	$71,600,000	$72,608,383	$67,408,909	*$22,723,000
Excess of exports	‡$34,000,000	$63,000,000	$271,924,410	*$54,406,000
Excess of gold imports	‡$26,968,000	$25,737,000	$41,590,000	†$630,716
Bureau of Labor Wholesale Price Index	‡151	148	167	100
Bradstreet's Index of Wholesale Prices	125.2	126	123.5	100
Economist's Index of British Prices	4297	4257	5097	2717
National Industrial Conference board's Cost of Living Index	‡157.7	161.4	176.3	100
New incorporations	$731,866,000	$591,404,300	$954,700,000	*$172,301,000
Railroad net earnings	$46,000,000	$29,604,000	§$7,378,000	*$59,900,000

*Monthly average. ‡February. †Monthly average export excess. §Deficit.

FOREIGN EXCHANGE (Demand)

	Normal	April 10 (close)	Week Before	One Month Ago	One Year Ago
Sterling	$4.86	$4.41	$4.37	$4.35	$3.90
Francs	19.36c	9.23c	9.03c	8.91c	7.07c
Lira	19.36c	5.41c	5.17c	5.02c	4.39c
Marks	23.86c	0.35c	0.33c	0.39c	1.62c

As a barometer of business the iron and steel industry has been proven by careful research to stand supreme. For that reason the recent striking gains in operations and demand and the upturn in prices are impressive. Today the steel ingot production is near a rate of 33,000,000 to 35,000,000 tons annually. In July the rate was 11,500,000. In the full year of 1913 output of ingots was 31,300,000 tons. In other words the industry is now at or beyond the prewar rate in a normally active year. Owing to the 33 per cent expansion in productive facilities present production is only 70 to 75 per cent of capacity but the gain in output is continuing its upward movement.

The stock market confirms the confidence now spreading in business. Governor Harding of the federal reserve bank, says that the rise in shares forecasts better business.

The foreign exchanges greeted the opening of the Genoa conference with important advances. French and Italian rates went above their recent highs and sterling shows a gain of 14 cents from last month's low point. Some tangible good evidently is expected to grow out of the conference, though probably the British financiers' plan to extend loans to eastern and central Europe had as much influence as any.

The coal strike has assumed a more serious turn by the penetration into the nonunion strongholds of the Connellsville coal and coke districts. From these fields come the fuel supplies of important units of the steel industry and any serious interruption of the flow inevitably would affect conditions in the industry. Curtailed and irregular production and higher prices could result, all of which might react unfavorably upon the present business revival. Next to the steel industry's gains, the great buying movement inaugurated by the railroads is of most significance. Swelling traffic, better earnings, low steel prices, the improved credit standing of the roads, easy money and an insatiable investment market, are all factors which have been conducive to heavy railroad purchases. The results of careful studies of probable requirements indicate that the roads should buy about 210,000 cars annually over the next few years. This would take care of replacements as well as providing for the normal growth of the country. Orders are now being placed at the rate of around 200,000 cars annually, compared with a total of 28,000 cars purchased by domestic roads in all of 1921. Buying by the roads has two highly important results. It insures the country against a ruinous car shortage, and it stimulates many phases of business activities, particularly that of iron and steel.

Students of business cycles long have contended that recoveries from depressions are always preceded by increased activities in construction. With this in mind let the record of building awards in 27 states compiled by the F. W. Dodge Co., speaks for itself. Total awards amounted to 53,000,000 square feet with a valuation of $293,636,000, an increase of around 70 per cent over February for both. Residential buildings gained 100 per cent and industrial building 70 per cent. Similarly, structural steel awards are being made at the rate of 100 per cent of shop capacity. One year ago the rate was 14 per cent.

The Business Trend

April 13, 1922

TRADE TODAY, TOLD BY IRON TRADE REVIEW CHARTS

GENERAL SITUATION—Business improvement assuming striking proportions, under spring expansion; disturbing factor seen in defections among nonunion miners which threaten fuel supplies of iron and steel plants; textile strikes continue; Genoa conference opens.

INDUSTRIAL ACTIVITY—March pig iron output largest in 14 months; ingot production gains 35 per cent over February and greatest since November, 1920.

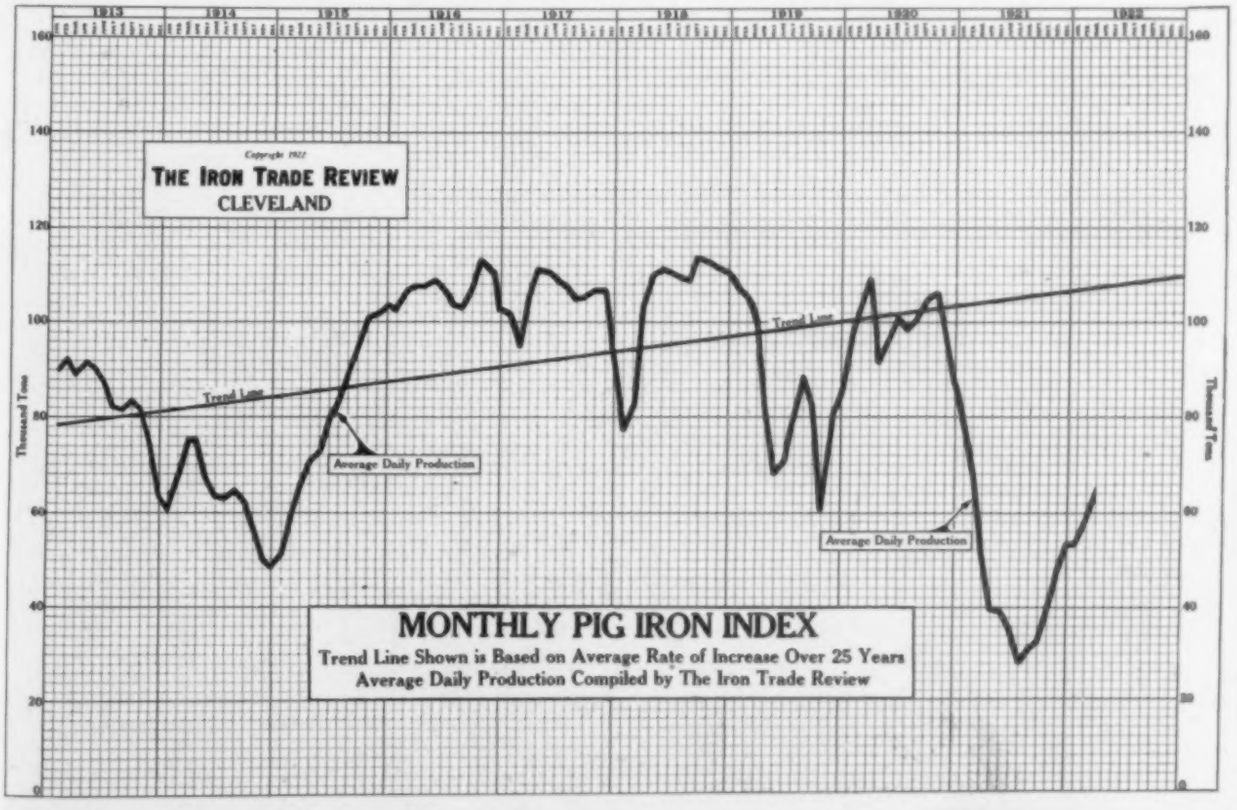
TRAFFIC—Roads buying freight cars at rate of around 200,000 for year against 28,000 for 1921; February earnings gain heavily; carloadings increased up to beginning of coal strike.

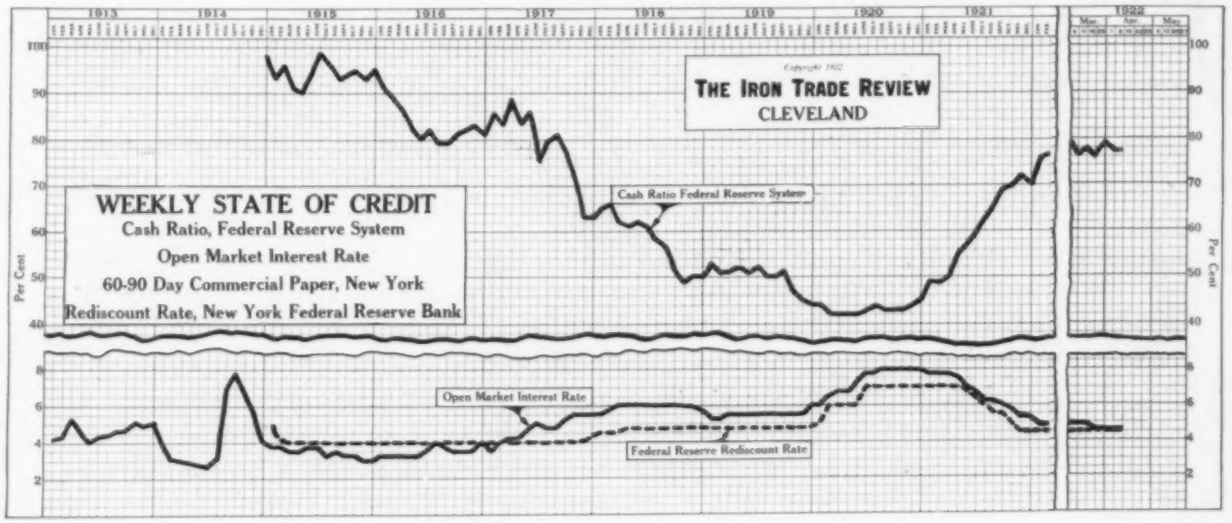
CREDIT CONDITIONS—Flood of time money hits financial centers; improvement of bank conditions marked in farm sections; higher reserve note circulation reflects more business.

SECURITY PRICES—Bull movement in stocks more pronounced; average prices still below 1920 high point; insatiable investment demand absorbing foreign and domestic issues.

BUILDING—March construction awards show tremendous gain of 70 per cent over February; residential and industrial awards gain 100 per cent and 70 per cent respectively.

COMMERCIAL FAILURES—March defaults gain over February but were less than in January; aggregate liabilities smaller; price stability continues.

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THE IRON TRADE REVIEW
CLEVELAND
WEEKLY STATE OF CREDIT
Cash Ratio, Federal Reserve System
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60-90 Day Commercial Paper, New York
Rediscount Rate, New York Federal Reserve Bank
Cash Ratio Federal Reserve System
Open Market Interest Rate
Federal Reserve Rediscount Rate
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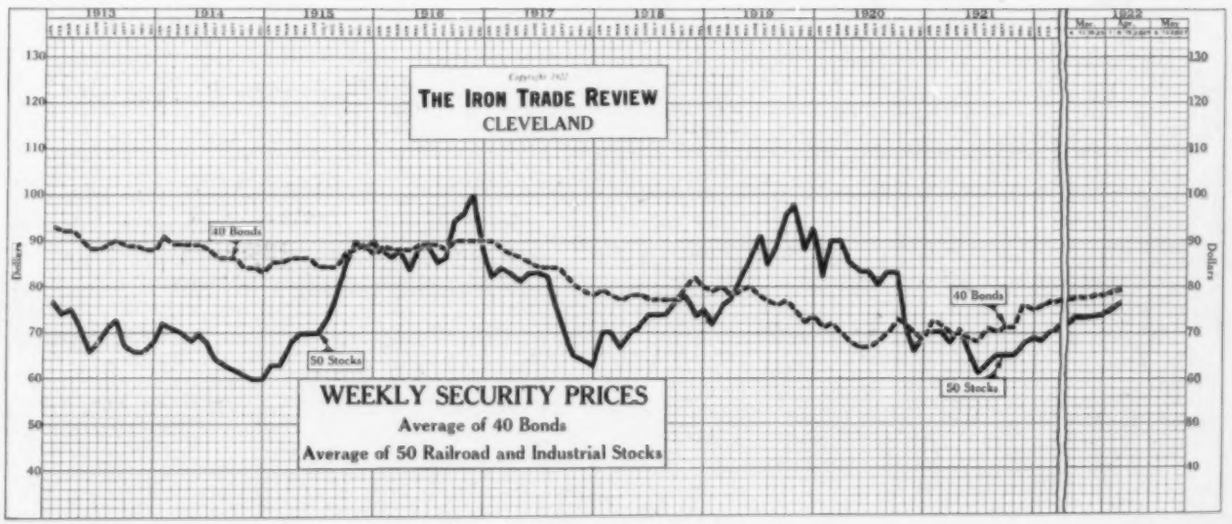
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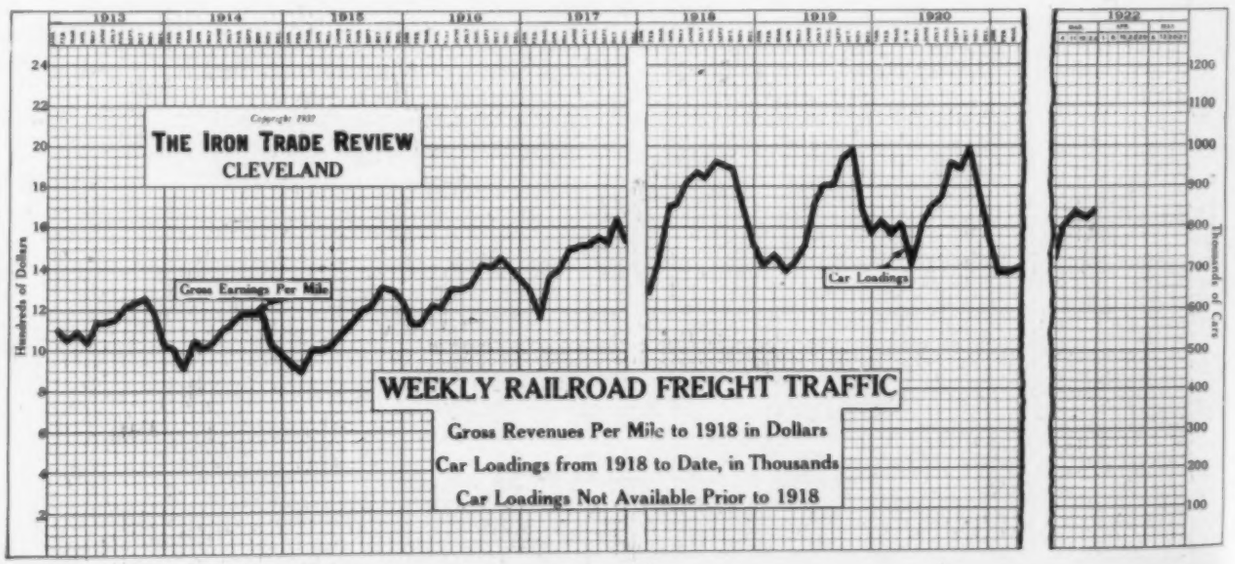
CLEVELAND
40 Bonds
50 Stocks
WEEKLY SECURITY PRICES
Average of 40 Bonds
Average of 50 Railroad and Industrial Stocks
Dollars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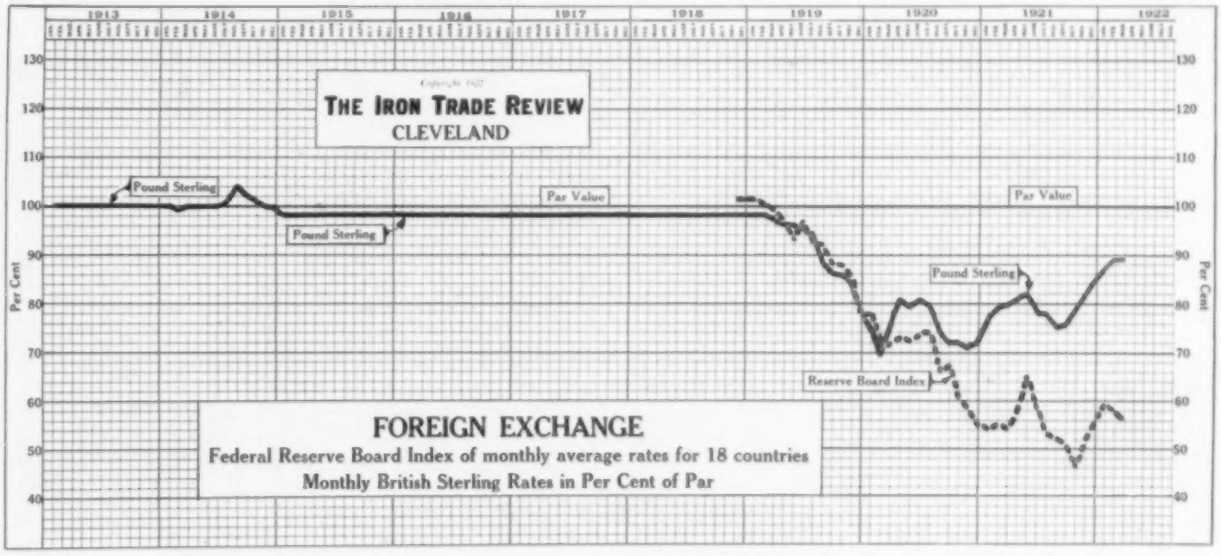
THE IRON TRADE REVIEW
CLEVELAND
Gross Earnings Per Mile
Car Loadings
WEEKLY RAILROAD FREIGHT TRAFFIC
Gross Revenues Per Mile to 1918 in Dollars
Car Loadings from 1918 to Date, in Thousands
Car Loadings Not Available Prior to 1918
Hundreds of Dollars
Thousands of Cars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THE IRON TRADE REVIEW
CLEVELAND
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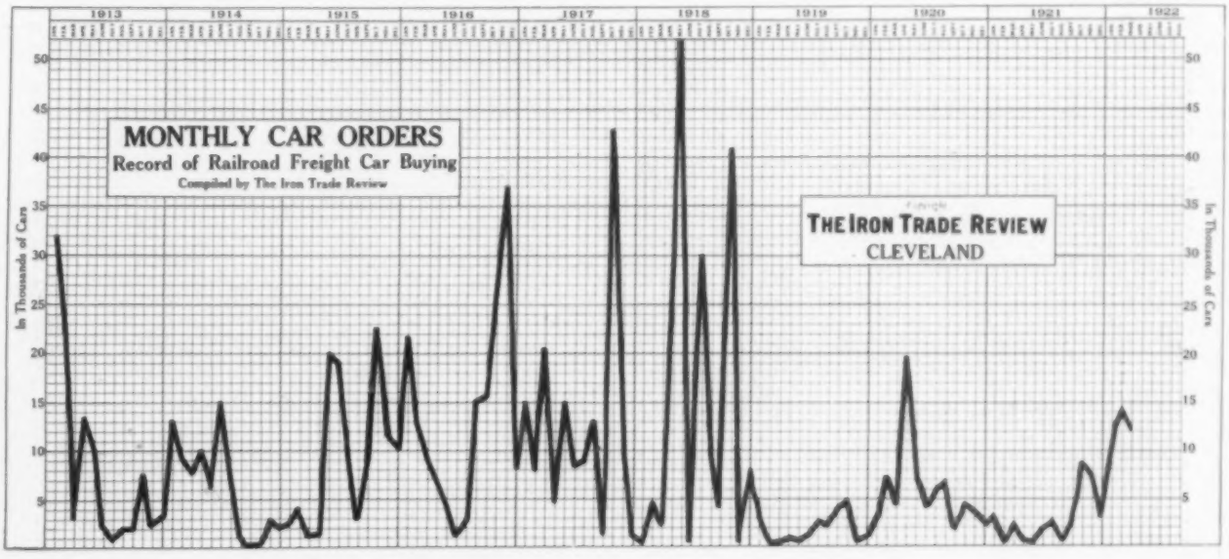
Reserve Board Index
Per Cent
FOREIGN EXCHANGE
Federal Reserve Board Index of monthly average rates for 18 countries
Monthly British Sterling Rates in Per Cent of Par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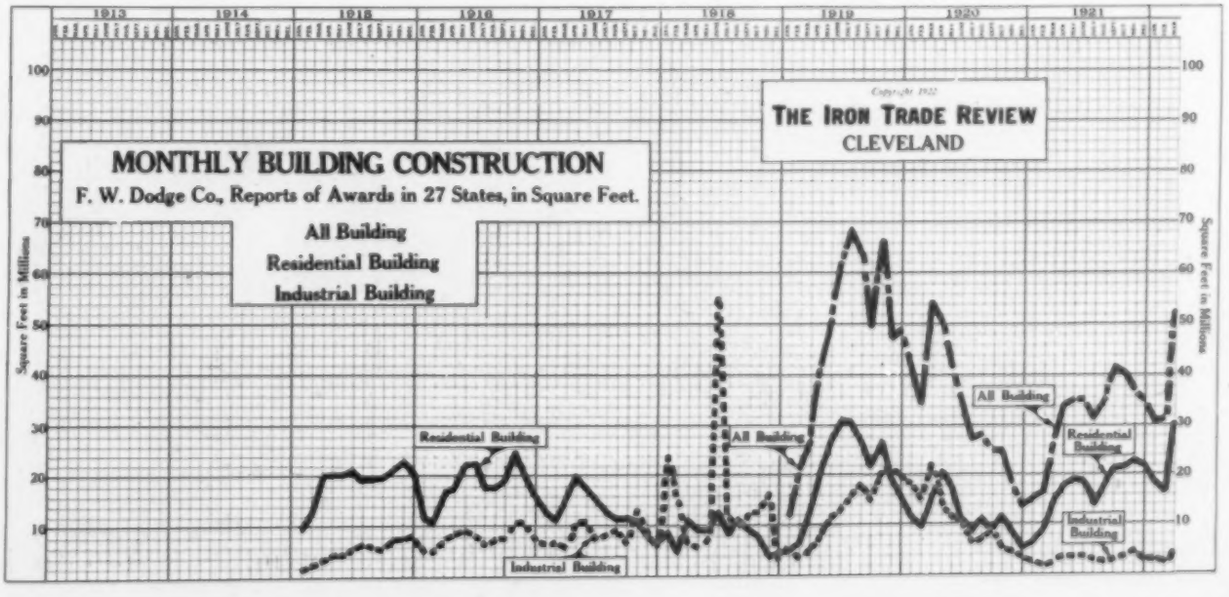
MONTHLY CAR ORDERS
Record of Railroad Freight Car Buying
Compiled by The Iron Trade Review
THE IRON TRADE REVIEW
CLEVELAND
In Thousands of Cars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MONTHLY BUILDING CONSTRUCTION
F. W. Dodge Co., Reports of Awards in 27 States, in Square Feet.
All Building
Residential Building
Industrial Building
Square Feet in Millions
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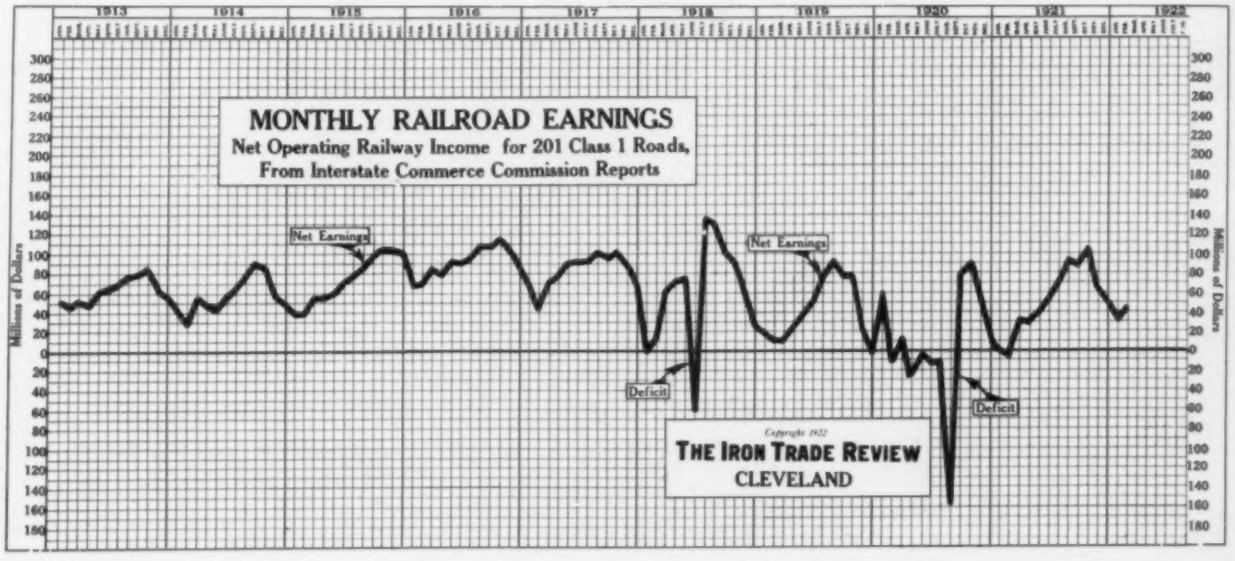
MONTHLY RAILROAD EARNINGS
Net Operating Railway Income for 201 Class 1 Roads,
From Interstate Commerce Commission Reports
Net Earnings
Net Earnings
Deficit
Deficit
Millions of Dollars
Millions of Dollars
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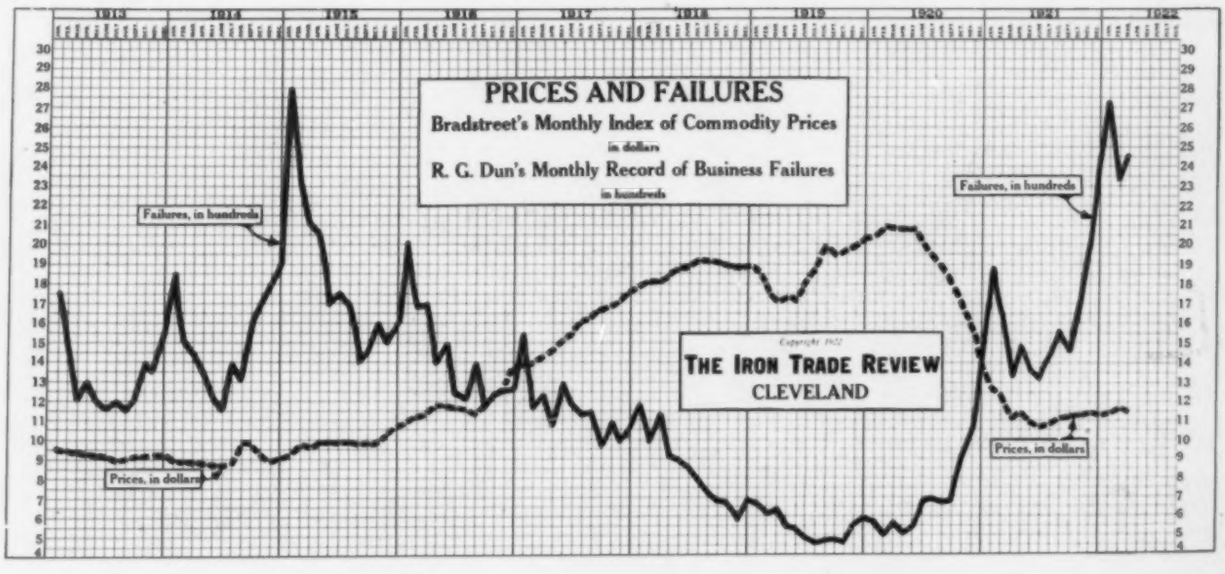
PRICES AND FAILURES
Bradstreet's Monthly Index of Commodity Prices
in dollars
R. G. Dun's Monthly Record of Business Failures
in hundreds
Failures, in hundreds
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Prices, in dollars
Prices, in dollars
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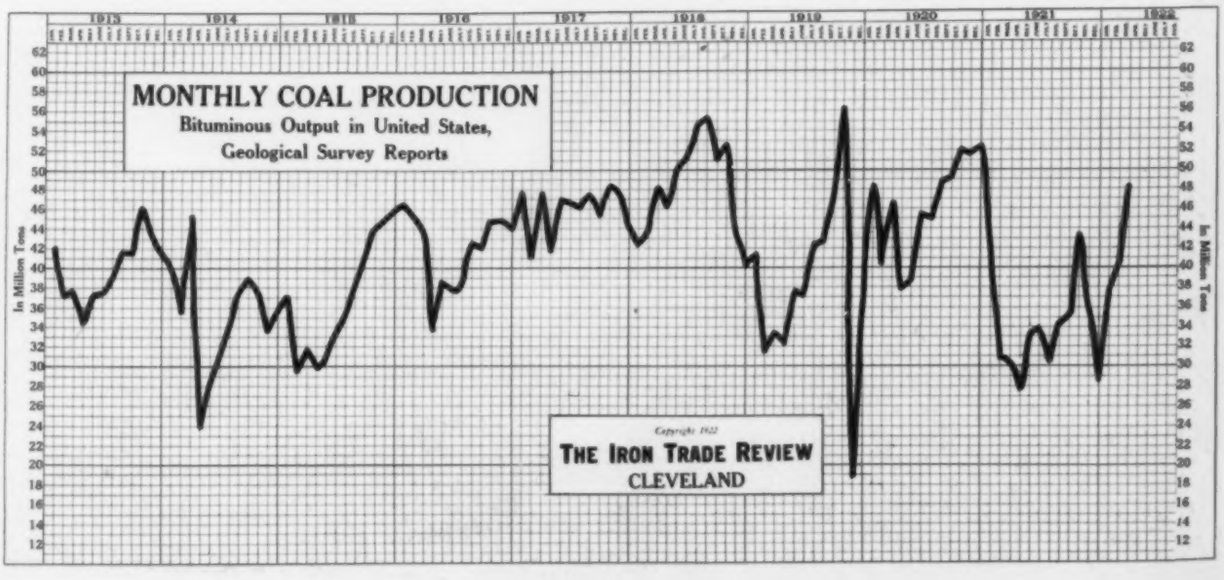
MONTHLY COAL PRODUCTION
Bituminous Output in United States,
Geological Survey Reports
In Million Tons
In Million Tons
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Choosing Rods for Welding Work

Selection of Welding Rod for Oxy-Acetylene Process Depends on the Service Requirements of the Finished Weld—Inspection of Rods and Tests of Welds Aid in Determining Choice of Materials

BY J. R. DAWSON

THE function of a welding rod is to supply the metal that is added during the welding operation to form a part of the weld. It may be used merely to fill in cavities, such as blow holes or other irregularities in castings, in which case it is desirable and usually necessary that the welding metal should have good machinable properties.

It may be employed to join the edges of pieces where desirable physical properties are essential, the requirements depending upon the particular service conditions, such as resistance to shock, great tensile strength, or stiffness. Sometimes it is used for building up worn surfaces, where hardness and ability to resist shocks are necessary in the weld metal, and for preparing locally hard surfaces through the use of alloy steel rods. Welding rods in the form of a bronze for brazing or in the form of solders of any required composition frequently are used.

There are practically no metals in commercial use that cannot be successfully welded by the oxy-acetylene torch, if the proper filling metal and proper manipulation of rod and blowpipe are employed. Great strides have been made in perfecting the apparatus used in this industry and in improving the quality of the gases and the facilities for their economical distribution. These higher quality welding materials enable the operator to obtain correct mixtures of the gases and to maintain a close control of the flame. This feature is important, because variations in the intensity of the flame or the use of incorrect gas in the mixtures lower the quality of the weld.

The importance of employing only properly trained operators is now generally recognized. Proper training is best effected by teaching the welder to recognize any defects he may introduce into the weld. He should then be shown by actual breaking of the weld the results of including these defects. This is best done by the use of testing machines so that the actual strength, elongation, angle of bend, etc., may be measured and the progress of improvement noted. The encouragement derived from knowledge of better work accomplished is an incentive to attain still higher standards. By the use of frequent tests to check their work, even welders who are generally regarded as experts have found that they can improve the quality of their work in instances as much as 25 per cent.

It is only recently that the importance of the correct selection of the welding rod has received any considerable share of the recognition that it merits, and that researches have been carried out for the improvement of existing rods and the development of new rods.

Unfortunately, the practice too often has been to fill a steel weld with whatever steel rod happened to be at hand, or to weld copper with a plain copper wire, the general character of the metal in each instance determining the most convenient filler at hand, without reference to scientific balance of component elements. The results of such methods have frequently been disappointing.

A better procedure is to use a rod that will produce a joint as good as or better than the original or base metal. In this connection it is well to bear in mind that the metals joined are usually in the rolled or forged condition, while the metal deposited from the welding rod is in the cast condition. Often a metal is of such composition as to possess excellent properties, after forging and heat treatment, but in the form of the casting is of little value.

This is well illustrated by the comparison of chrome-vanadium steel. After forging and careful heat treatment these steels have a tensile strength in the neighborhood of 150,000 or even 200,000 pounds per square inch and are highly resistant to shocks and to alternating stresses. In the cast condition the tensile strength is only

From a paper delivered before the last annual convention of the International Acetylene association. The author is a member of the technical staff of the Union Carbide and Carbon Research Laboratories, Inc., Long Island City, N. Y.

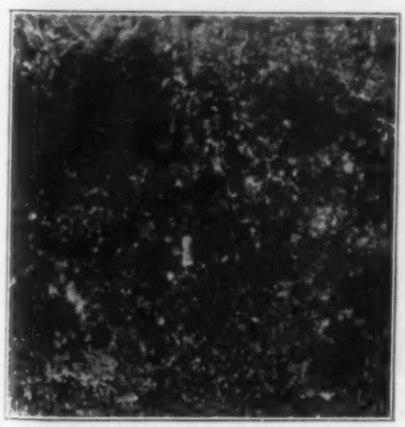


FIG. 1—FILLED-IN WELD METAL AND ITS JUNCTION WITH THE ORIGINAL STEEL PLATE. THE WELD METAL WAS DARKENED BY ETCHING

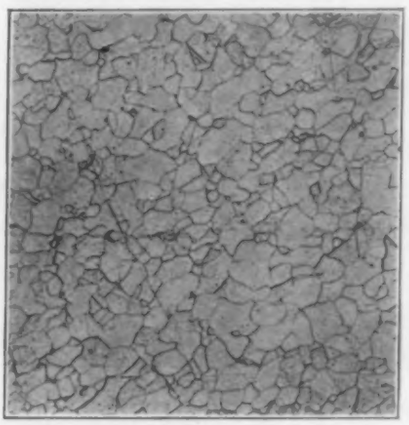


FIG. 2—SPECIMEN CONTAINING LESS THAN 0.5 PER CENT CARBON. THE FIELD IS MADE UP OF FERRITE AND SMALL INCLUSIONS OF OXIDES

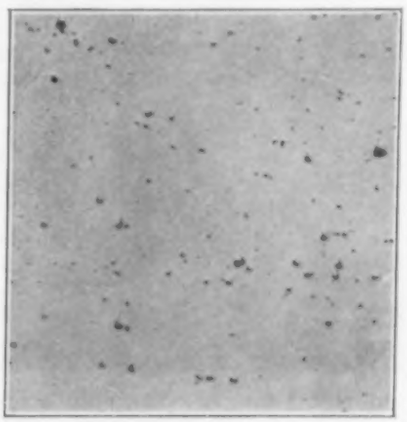


FIG. 3—IMPURITIES IN 0.02 PER CENT CARBON STEEL ROD. THE MAJORITY OF THESE INCLUSIONS ARE ALUMINUM OXIDE

FIG. 4—WELD MADE FROM 0.35 PER CENT CARBON STEEL ROD. THE WIDMANSTATTEN-LIKE STRUCTURE IS CHARACTERISTIC OF MEDIUM CARBON STEEL THAT HAS COOLED FROM A HIGH TEMPERATURE

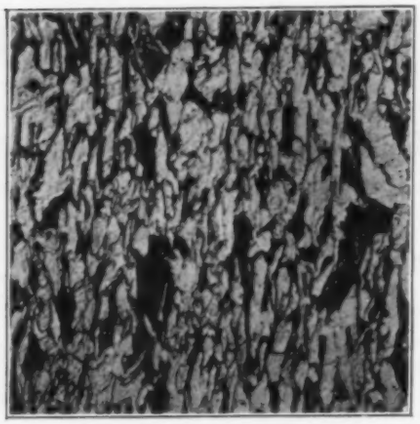


FIG. 5—COLD DRAWN NICKEL STEEL ROD. CARBON 0.24 PER CENT, NICKEL 3.50 PER CENT. THE ELONGATED GRAINS ARE DUE TO THE DEFORMATION SET UP BY THE REDUCTION DURING THE DRAWING OPERATION

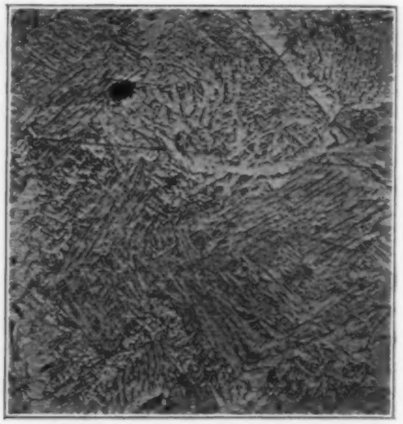


FIG. 6—WELD METAL OBTAINED FROM NICKEL STEEL ROD. ONE SMALL SLAG INCLUSION IS SHOWN, OTHERWISE THE WELD IS QUITE CLEAN AND FREE FROM DEFECTS

slightly higher than that of unalloyed steel of the same carbon content.

A further consideration is that the welding operation frequently causes a change in the chemical composition as the metal of the rod is fused into the weld. For example, 11 to 13 per cent manganese steel is widely used where resistance to wear and shock is required. A welding rod of this composition will yield welded steel containing 9 to 10 per cent manganese, which is so brittle as to be without value. The solution is to use a rod containing at least 14 per cent manganese, which will yield weld metal of the correct 12 per cent manganese content.

Fuse Rod and Metal Simultaneously

In order to obtain a high grade weld it is necessary to fuse the edges of the base metal and the welding rod at the same time, and to obtain an intermingling of the two metals. The product of this mixing may be entirely different from either of the original metals. This may be illustrated by attempts that have been made to weld cast iron with steel rods. The mixture of the metals at the junction is weak brittle, hard to machine, and lacking in the good qualities of either steel or cast iron. However, when the product is not required to stand severe strains or shocks there are certain instances when steel may be successfully welded to cast iron.

The composition of the rod should be such that during welding the metal is not so liquid as to run easily over the unfused metal, covering up improperly fused and oxidized surfaces, nor should the melted metal be so viscous as to pile up and cause difficulty in obtaining a weld that is homogeneous and smooth at the surface. A satisfactory rod will be sufficiently free from impurities and of such composition that the slag formed by welding will fuse and float readily to the surface of the molten pool. A thin slag has the advantage of protecting the metal surfaces from oxidation, and when present in small amount is not readily entrapped in the area of the weld.

Melting Points Should Coincide

Manipulation is easier and attended with greater success when the melting points of the rod and the metal being welded are approximately the same. Where there is considerable difference the low-melting point metal is overheated and damaged before the higher-melting-point metal is fused.

This rate of fusion also makes important the exercise of care in choosing

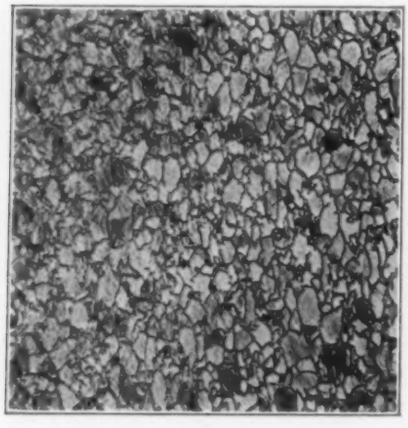


FIG. 7—MANGANESE STEEL ROD. MAGNIFICATION 425 DIAMETERS. THE SMALL LIGHT COLORED GRAINS ARE AUSTENITE WHICH IS A RATHER UNSTABLE CONSTITUENT

FIG. 8—MANGANESE STEEL WELD METAL. HERE THE AUSTENITE GRAINS HAVE PARTIALLY DISINTEGRATED AND MARTENSITIC STRUCTURE IS OBSERVED. THIS MATERIAL IS SHOWN BEFORE HEAT TREATING

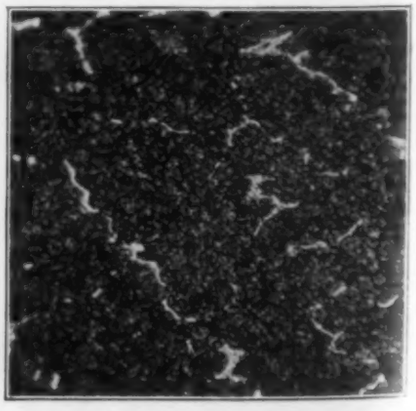


FIG. 9—HIGH SPEED STEEL WELD METAL, MAGNIFIED 425 DIAMETERS. THIS MATERIAL HAS BEEN CORRECTLY HEAT TREATED AND HAS PROVED TO BE AN EXTRA GOOD TOOL SHOWN BY TESTS

the size of rod and welding head for a given weld. The heat supplied should be sufficient to keep a small pool of molten metal in the weld and to melt in additional metal from the rod. If the rod is too large it will tend to chill the molten bath and may sufficiently lower the temperature to retard or virtually stop fusion of the rod metal into the weld. On the other hand, if the rod is too small it will not absorb the heat of the flame and pool rapidly enough, and the excess heat which results in the weld will burn the metal.

The usual method of manipulation is to melt a small pool of the base metal and then insert the rod in the molten pool. By this method the rod absorbs the heat necessary to melt it down and at the same time prevents the temperature of the molten pool from rising far above its melting point. The principle is the same that governs the temperature of water containing ice. It cannot be heated to a temperature higher than that of melting ice until the last of the ice is melted.

The torch is gradually moved along the weld and all slag is floated to the surface and laps or cold shuts melted out, the rod being kept constantly in the pool to supply metal for filling. Care is always exercised in manipulating the rod to avoid pushing the fused metal over the unfused metal.

The covering of unfused surfaces would produce the difficulty commonly called lamination, which is similar to the seams that sometimes occur in the rolling or forging of steel. This method of holding the rod suspended in the molten pool aids in the production of a clean weld, because it keeps the melting metal covered by the pool, prevents any oxidation below the surface, and makes it improbable that any oxidation or foreign matter will be carried to the interior of the weld. Furthermore, the neutral gases when directed at the weld adjacent to the rod, envelope both the rod and the bath in such a manner as to exclude atmospheric oxygen from the weld, so that excessive oxidation cannot occur when the filling rod and the blow pipe are properly manipulated.

Composition of Welding Rods

Since the selection of the rod depends on the service requirements of the finished weld, it may well be to consider briefly a few of the better-known rods and the conditions under which they may be used to the best advantage.

The most important of the welding rods, if we judge by the quantity consumed, is Norway iron which, though really a steel, approaches closely to pure iron. A weld made properly with this rod will have a tensile strength of over 50,000 pounds per square inch and an elongation of from 25 to 30 per cent in two inches, thus combining high strength and excellent ductility.

The next in importance is the mild steel rod which contains 0.2 per cent carbon, and other elements in the usual percentage. Norway iron and this material may be used interchangeably, depending largely on the operator's preference. The mild steel rod ordinarily gives a weld a higher tensile strength but of slightly lower ductility.

The following table illustrates the tensile properties of welds made by a

FIG. 10—A SECTION OF CAST IRON AS WELDED WITH THE OXYACETYLENE TORCH. THE WELD IS FREE FROM BLOWHOLES OR SLAG INCLUSIONS X2

properly trained operator using the mild steel filling rod. Note the practical uniformity in the results of the successive welds:

Sample No.	Yield point*	Ult. ten. strength*	Elongation in 2 inches†	Contr. of area†	Fracture
1	36,000	54,150	10	18.6	Fine crystals
2	34,550	55,400	14	20.6	Silky
3	36,420	56,700	16	16.0	Silky
4	35,150	55,100	12	14.4	Fine crystals
5	37,150	53,200	10	18.6	Silky
Aver.	35,850	54,850	12.4	17.6	

*Pounds per square inch.
†Per cent.

These values were obtained in testing welds in ship plate of 60,000 pounds per square inch tensile strength. They are not isolated or exceptional in any sense, being merely good average welds. The specimens were machined over all in order to make it possible to secure accurate measurements.

High carbon welding rods are employed for building up worn shafting and for many other common uses where metal is required of sufficient hardness to resist wear and tough enough to resist shocks and other stresses. The carbon content of these rods may vary over a rather wide range, depending on the requirements of the finished welds.

Welds have been obtained that have a Brinell hardness higher than 400, which is too hard to machine. However, any hardness in the range from a mild steel of Brinell number below 100 up to the highest value can be obtained by the selection of a rod of suitable chemical composition.

Effect of Carbon on Steel Welds

Steel that has been subjected to mechanical work as in rolling or forging is strengthened by increasing the carbon content, but an increase of carbon in steel welding rods does not greatly increase the tensile strength of the resulting weld. This is due to the fact that the weld is essentially a casting and the weld metal forms in larger and weaker grains as the carbon content is increased, and to the added fact that welders have greater difficulty in obtaining sound welds with the higher carbon steels.

There are a few skillful welders who have obtained excellent success with nickel steel welding rods containing 0.20 to 0.25 per cent carbon and 3.0 to 3.50 per cent nickel. Many other welders obtain poor results with this steel owing to cracks that form in a weld while it is red hot. The tendency to crack is due to the well known brittleness of nickel steel at high temperature. This property is illustrated by the difficulties so frequently encountered in forging nickel steel and by high temperature tensile tests showing that nickel steels as compared with other steels decrease rapidly in ductility at high temperatures.

Operators who are sufficiently skilled in handling nickel steel rods can make welds having a tensile strength as high as 60,000 pounds per square inch. This strength is greater than that of low carbon steel plate, such as boiler plate for example, and when tensile tests are made the break does not occur in the weld but generally several inches away in the plate metal.

High speed steel rods are rather widely used for making tipped tools. The high speed steel is melted into a slot cut from the end of a low carbon steel shank. After correct heat treat-

ment the cutting qualities of the high speed deposited by the oxy-acetylene welder are as good as the high grade commercial brands of high speed steel. The melting causes little change in the chemical composition, usually a slight reduction of the contained silicon and maganese, so the rods used should have about the same composition as a standard high speed steel. A wide variety of shapes and sizes of tools are thus made available without tying up an appreciable amount of money in costly material, as is the case when solid high speed steel is used. The requisite for success here as with every high speed steel is correct heat treatment.

Manganese rods are employed in the repair of machinery used for grinding and for other service where great resistance to abrasion is required. As previously explained, the manganese content of the rod should not be less than 14 per cent.

Special precautions are necessary in welding this steel. The part to be welded should be supported so that the heated portion will be under as little strain as possible; it should be preheated to redness before the welding is begun and kept red hot during the operation. In this steel the favorable properties of great resistance to shock and abrasion are brought out by quenching in water from a temperature of about 1800 degrees Fahr. In order to obtain the best results after welding, the quenching practice employed in manufacture should be closely followed.

Valuable in Salvaging Castings

One of the commonest of oxy-acetylene welding operations is the welding of cast iron. The expenditure of a few dollars for welding in this field may easily result in the salvage of a casting worth several hundred dollars. The composition of the rods used for this work is that of ordinary gray cast iron, the silicon content of which should be relatively high and the percentage of sulphur low. Excepting for certain special uses, gray cast iron is standard. Increasing the silicon content reduces the amount of carbon retained in solution during cooling, resulting in the deposition of a larger portion of it in thin graphite flakes throughout the cast iron. It is this structure which gives the fracture of gray iron its characteristic appearance. Gray iron is more brittle than white iron and is readily machined, while white iron cannot be machined. When rods of correct composition are used the weld metal obtained is usually as strong as the original casting. The tensile strength of a cast iron weld is about 18,000 to 20,000 pounds per square inch and the transverse test of 1-inch square section using a 12-inch beam loaded at the center is from 2,000 to 2,500 pounds with a deflection of 0.1 to 0.15 inches.

Even though they may be of correct chemical composition, experience has shown that some rods are unsuited for welding. Any one of the manufacturing operations of melting, casting, rolling, cold-drawing, etc., may not have been correctly handled, resulting in a faulty product. It is essential that the rods be made by good manufacturing practice.

Investigation of several curious failures of welding materials has focused attention on certain factors that as yet remain somewhat obscure. Occasionally welding rods are encountered that are not satisfactory in their welding properties, even though chemical analysis of the material shows that the proportions of the elements usually specified are correct. This trouble has not been found alone in rods but in certain lots of sheet metal, as was recently demonstrated in an investigation of sheet steel that did not meet the requirements of a certain manufacturer for welding. The rod was satisfactory, the equipment and welding procedure all that could be desired, and still it was not possible to make a satisfactory weld. Here again even most careful metallographic examination did not reveal conclusive evidence of the cause of failure. A simple test in which none of the factors of torch operation or gas fusion entered, proved that it was impossible to melt the given steel and obtain a solid fusion free from blowholes and sponginess.

This example is mentioned to illustrate that as yet we do not know all there is to be known of the physico-chemical reactions taking place when the melting of a welding metal occurs. Difficulties may arise that can be traced back to the melting stages in the manufacture of the steel itself. Occluded gases or dissolved oxides and other potent mischief makers, because of their reaction at torch temperatures, may liberate gases which will render unsatisfactory the most carefully made weld. These examples are mentioned to bring out the fact that the steelmaker and foundryman share with the welder himself some of the responsibility and should work with him in solving the problem of making better welds.

Purchasers of rods may protect themselves by careful inspection and tests. Each grade of material should be tagged and given a distinctive marking, and the different grades should be kept in separate places, so that mixing of the rods will be avoided. The surfaces of the rods should be free from lime or scale or rust. Among the impurities that rods may contain are slag inclusions, oxides and dissolved gases. Slag inclusions in the rod will be deposited in the weld and only with great skill and care will be floated to the surface. One of the most objectionable impurities in the welding rod is the aluminum oxide which results from the aluminum which is added to the steel as a deoxidizer during manufacture. While, if the manufacturing practice is right, it is not necessary to use sufficient aluminum to make trouble, an excess of aluminum resulting from careless manufacture is sure to present difficulties to the welder in the form of aluminum oxide. During welding the presence of aluminum oxide causes a granular appearing refractory slag to form on the surface of the melted metal, and difficulty is encountered in preventing some inclusion of this slag in the weld.

Detecting Iron Oxide

Iron oxide is readily dissolved in low carbon steel, and when present in the rod it can never be eliminated by the welding operation. Excessive oxides in the rod render it hot short, and their presence to excess may be detected by heating the rod to a bright red and bending quickly. A properly deoxidized steel rod will not break or crack from this treatment.

When, due to faulty manufacture, dissolved gases are present in the rod or plate metal, they will be evolved during the welding process, and when the metal cools it will be left in a weak porous condition. A satisfactory test of welding rods is to place several short lengths beside each other on the welding table and fuse them together. Then from other samples of the same lot build up the metal to twice the thickness of the rods. The workability of the metal may be observed, and the volume and character of the slag and any evolution of gases can be noticed. This test specimen should be broken and the toughness and ductility as well as the appearance of the fracture noted. These observations, together with those made during welding, should enable the purchaser of rods to know rather definitely whether or not the particular kind of rod thus tested is suited to his requirements.

Until recently there was no recognized standard for testing welds. Leaders in the industry have recognized the need for a uniform practice in testing, so that a greater knowledge of the properties of welds will be

(*Concluded on Page* 1043)

Human Life and Iron Ore

The Iron Hunter, by Chase S. Osborn, 316 pages, 5¼ x 7¼ inches; cloth; published by the MacMillan Co., New York, and for sale by THE IRON TRADE REVIEW; price $2.00 net.

This is a new edition of a popular book published in 1919 and reviewed in THE IRON TRADE REVIEW at that time. It is an account of the author's quest for iron ore, and develops in a "human interest" way the story of the Lake Superior ranges. It contains the reminiscences of a man who born in poverty attained leadership, fame and fortune. A whimsical slant at human nature is given on the very first page. The author held great prejudice against autobiographies, mentioning this to his friend, Emerson Hough, who urged him to write the book. Mr. Hough said: "The fact is you unconsciously possess such a Gargantuan ego that you think you must conceal it by a false show of modesty. If you were really modest you would not think of your ego, but would as willingly write of yourself as of another." A story of particular interest to those interested in iron and steel is interwoven with many curious observations on life in general.

* * *

Outlines Locomotive Repair Problems

Steam Locomotive Construction and Maintenance, by E. L. Ahrons; cloth; 134 pages, 4 x 6½ inches; published by Sir Isaac Pittman & Sons, Ltd., and for sale by THE IRON TRADE REVIEW, Cleveland; price, 85c.

Although the subject of this book covers a broad field, the author has selected the essential facts and presented them in 11 brief chapters and with the aid of 50 illustrations. The text reflects methods of locomotive construction and maintenance employed in England which differs in some details from those in use in the United States. The author touches on general considerations affecting methods of construction, the function of the boiler shop, foundries, forge shop, machine shop and erecting shop. The maintenance work involving springs, frames and cylinders, axles and wheels, valve setting, inspection and testing, is treated in a concise manner. The final chapter, entitled "Locomotive Maintenance and Repairs," deals briefly with the various parts of the locomotive which require frequent renewals or repairs.

* * *

Arc Welding in Railroad Work

Electric Arc Welding, by E. Wanamaker and H. R. Pennington; cloth; 254 pages, 6 x 8¼ inches; published by Simmons-Boardman Publishing Co and for sale by THE IRON TRADE REVIEW, Cleveland; price, $4.

By virtue of their experience in handling electric arc welding problems in railroad work, the authors of *Electric Arc Welding,* who are electrical engineer and supervisor of electrical equipment and welding, respectively, of the Chicago, Rock Island & Pacific Railroad, have been able to present a fund of practical information in a manner most easily understood by the user of electric welding apparatus. It is not claimed that the book covers the entire field of electric welding; it is confined almost exclusively to autogenous electric arc welding.

The text is divided into eleven sections and is supplemented by 167 illustrations, including reproductions of photographs, drawings and charts. Following a history of the evolution of welding embracing the five different methods, the equipment for the electric arc process is described and the operating characteristics and circuits explained. Section IV is devoted to the principles of the art, the heat, temperature, current and potential of the arc being discussed. The subject of metal transfer also is discussed in this chapter. In the section on training operators, the authors distinguish between universal and specialized welders. The former are those who are qualified to handle almost any type of arc welding. Highly skilled men are required for work of this kind. Specialized operators are classified in several groups such as pressure vessel, machinery, and structural welders and those working on repeat operations. Some of these operations require a high degree of skill but the fourth classification involves the least experience. Section VI is devoted to carbon arc welding and cutting and in the following chapter materials for electrodes used in metallic arc welding are described and discussed. In Chapter VIII methods of preparing work for welding are presented while in the following chapter special considerations involved in the welding of iron, steel and nonferrous metals are outlined. Section X deals with the application of arc welding to railroads and structural engineering. This is an especially valuable contribution to the literature on welding because of the intimate knowledge of the authors on this particular subject. The final section is devoted to miscellaneous notes and data, which include a number of typical micrographs and tables which have proved useful in welding shops.

* * *

Facts About The South

Blue Book of Southern Progress; paper; 122 pages, 6 x 9 inches; published by the *Manufacturers Record* and for sale by THE IRON TRADE REVIEW, Cleveland; price, 50c.

This book gives an unusually clear conception of the past and present status of industry in the South. The need of the book is well stated by Richard A. Edmonds, editor of the *Manufacturers Record,* Baltimore, in the opening sentences of an article entitled "The South of Yesterday and Tomorrow." Mr. Edmonds writes: "The Old South, or the South of ante bellum days made history but it left to others the writing of it. Because of the latter fact, no other section of the United States has been so little understood nor has any other section been so often misrepresented or misunderstood either in other sections or at home. A large proportion of the people of this generation of the South have failed because of a lack of ade-

quate teaching in colleges and in the press to understand their own section and especially its business development prior to 1860. They have not grasped in full its enormous potentialities nor have they understood the history making power of the ante bellum South."

This book is an attempt to sweep aside misconceptions of the South and to inform the public of the real position of the southern states in the industrial life of the nation. A large part of the text consists of statistics comparing southern industries with those of the other parts of the country. These statistics are unusually comprehensive and cover the production of all important commodities, transportation data, figures on commerce and trade, financial resources, assessed value of taxable property, building records of southern cities, and imports and exports through southern ports. In conclusion the statistics are grouped by states, showing the economic development of Alabama, Arkansas, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Texas, Tennessee, Virginia and West Virginia.

* * *

Describes Valve Gear

Steam Engine Valves and Valve Gears, by E. L. Ahrons; cloth; 112 pages, 4x6½ inches; published by Sir Isaac Pittman & Sons, Ltd., and for sale by THE IRON TRADE REVIEW, Cleveland; 85c.

Realizing that it is impossible to deal extensively with the subject of steam engine valves and valve gears in a small book of slightly more than 100 pages, the author has limited his treatment of the subject to a description of the practical valve gear now in general use on stationary engines. The subject matter is divided into 11 chapters and is supplemented by 45 illustrations, most of which are reproductions of drawings and indicator diagrams.

Following a brief outline of the principle of steam distribution in steam engines, the author describes the simple slide valve and eccentric and modified forms of the slide valve. He then describes variable cutoff or expansion slide valves and shows the use of the valve diagrams.

Chapter VI is devoted to eccentric reversing gears with particular mention of the Stephenson link motion. Walschaert's and radial, valve gear and corliss and drop valves and valve gear are described and illustrated in order. The final chapter is devoted to the uniflow engine. Descriptions of several well known forms of radial and corliss valve gears and a number of link motions have been omitted for the sake of conciseness.

An involuntary petition in bankruptcy has been filed against the Bull Dog Tractor Co., Fond du Lac, Wis. No statement of assets and liabilities is as yet available.

Canadian Iron Shows Decline in January

Output of pig iron in Canada, which was at a low level during the latter part of 1921, dropped further in January, 1922 to 32,184 tons, as compared with 39,917 tons in December, according to the Dominion bureau of statistics. The production of basic iron fell to 23,137 tons as compared with 30,698 tons in December.

Output of foundry iron totaled 9047 tons and more than doubled the preceding month's output of 2948 tons. No malleable iron was made in January, while in December a total of 6271 tons was reported. Ferroalloys made during the month amounted to 604 tons, all of which was ferrosilicon. In spite of the decline in total production, two additional furnaces were blown in, thus at the end of the month four out of a total of 20 were active.

The output of steel ingots and castings in Canada during January declined almost 10,000 tons from the total produced in December. The total made was 33,011 tons, comprising 31,160 tons of basic open-hearth ingots, 3 tons bessemer ingots, 920 tons basic open-hearth castings, 90 tons bessemer castings and 856 tons of electric steel castings, or a total of 31,163 tons of steel ingots and 1848 tons of direct steel castings.

Practically the whole of the latter output was made by producing firms for their own use.

Commission To Recommend Standards

DEFINITE recommendations concerning the standardization of tap drill sizes and of bolt heads, nuts and screw heads are expected to be made at the April meeting of the national screw thread commission by the two subcommittees assigned this work. With the commission assured of continuation until March 21, 1927, through the recent passage of the Tilson joint resolution, these standardizations probably will be the first supplementary accomplishments.

The meeting of the commission, to be held about April 20 is expected also to lead to a discussion of wire gages in connection with screw stock and drill sizes. Consideration also is likely to be given the proposal to put into effect the recommendation of the American Society of Mechanical Engineers, dating back to 1895, to replace arbitrary gage numbers by the decimal size expressed in thousandths of an inch. For example, No. 125 would have a diameter of 0.125 of an inch.

Some progress has been made, the commission reports in classifying decimal sizes in groups in such a way that the maximum number of present wire gage sizes will be included. To put this proposed gage in effect would eliminate the pesent confusion arising from the use of many different wire and sheet metal gages, it is contended. Now, 26 different gage systems are in use. In this project the commission is planning to co-operate with the sectional committee of the American Engineering Standards commission, recently formed and working along similar lines.

Dr. S. W. Stratton, chief of the bureau of standards, where the screw thread commission makes its headquarters, is continuing as chairman. The other members of the commission at present are Lieut. Col. E. C. Peck, of the Cleveland Twist Drill Co., Cleveland; F. O. Wells, Greenfield Tap & Die Corp., Greenfield, Mass.; Earle Buckingham, Pratt & Whitney Co., Hartford, Conn.; Maj. J. O. Johnson, chief of gage section, war department; Lieut. Commander J. N. Ferguson, navy bureau of ordnance; Lieut. Commander C. A. Jones, navy bureau of steam engineering; Ralph E. Flanders, Jones & Lamson Machine Co., Springfield, Vt.; and E. H. Ehrman, Chicago Screw Co., Chicago. H. W. Bearce, of the United States bureau of standards, continues as secretary. The commission was first authorized by the bill of July 18, 1918, held its first meeting on the following Sept. 12 and has had three extensions since.

Preparing for Test

After three preliminary meetings in Washington and New York the newly-formed gage-steel committee is preparing for its first preliminary test. This committee is considering a program for arriving at more satisfactory specifications for the composition and heat treatment of gage steels. In this program the bureau of standards, army

and navy, Cleveland Twist Drill Co., Pratt & Whitney Co., Brown & Sharpe Mfg. Co., Colonial Steel Co., Crucible Steel Co. of America, Carpenter Steel Co., John Bath & Co., Greenfield Tap & Die Corp., Taft-Pierce Mfg. Co., and the Watervliet arsenal are co-operating. The committee, while unofficial and without legal affiliation to the screw thread commission, is the result of the quickening of the industry through the commission's activity.

The committee believes that the most difficult and important problem to be solved is that of finding a steel in which the dimensional changes after hardening are negligibly small. It has been brought out that no single composition or heat treatment should be expected to be satisfactory for all types of gages; ease of machining, hardness of surface, resistance to abrasion, resistance to corrosion, freedom from distortion on hardening, and other characteristics being of different relative importance under different conditions of manufacture and use.

After thorough discussion of the form of test specimens, heat treatment, methods of measurement and the like, the gage steel committee has formulated the following program for first test:

Test specimens of the threaded form shown at *b* in the accompanying diagram and test specimens of the cylindrical block form as shown at *a* are to be used in the determination of changes due to hardening and with time, the lead of the threaded specimen *b*, the total length and diameters of both specimens *a* and *b* to be measured for changes in hardening, and the length of the cylindrical specimens to be measured for changes with time. The threaded specimens may then be used for shop wear tests if desired. Test specimens of a disk form as shown at *c* are to be used in the determination of wear on the Amsler machine at the bureau of standards.

Allocates Specimen Production

It was decided that the work of making the test specimens should be divided among companies directly interested in the results of the investigation, specimens to be ground on the measuring surfaces while soft with a finish to permit an accuracy of about 0.00002 inch in the first measurement before hardening.

Specimens are to be made of the following steels:

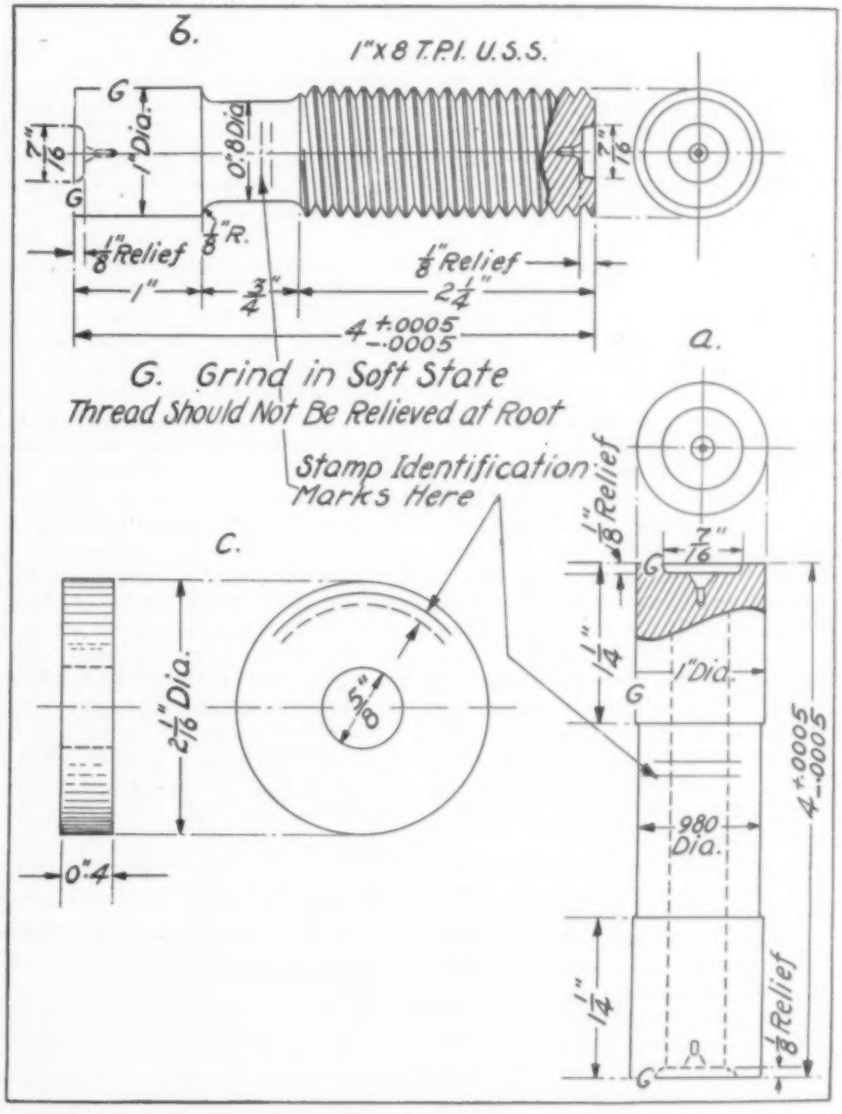
1. Carbon steel, carbon 0.85.
2. Carbon steel, carbon 1.10 to 1.25.
3. Drill steel, carbon 1.10 to 1.20; chromium 0.5.
4. Ball bearing steel, carbon 1.10; chromium 1.40.
5. Nondeforming steel, carbon 0.90; manganese 1.25; chromium 0.5; tungsten 0.5.
6. Case-hardening steel, containing carbon, nickel, chromium. For the wear tests the disks *c* are to be run with similar disks made of 0.45 carbon steel.

Heat treated to develop 100,000 pounds tensile strength, or of drill steel; water quenched and tempered five minutes at 325 degrees Fahr.

All stock is to be normalized or annealed at the bureau before the specimens are manufactured. A suitable hardening temperature is to be used. Some specimens are to be quenched in oil, others in water. After measurements have been made to determine change in hardening, steels are to be drawn back at 325 degrees Fahr. and remeasured. It was decided that different rates of heating are to be used. Five rates of heating will probably be sufficient to determine the effect of rate of heating on the changes in the samples. Three samples of both specimens *a* and *b* are to be used at each rate for each of the 6 types of steel.

Four specimens, *c*, of each of the steels are to be tempered at 325 degrees Fahr., two to be run against the 0.45 carbon disks, and two specimens to be run against drill steel disks. Also two specimens, *c*, of each steel are to be tempered at 400 degrees Fahr. for carbon steels and at 375 degrees Fahr. for chromium steels, two of these to be run against 0.45 carbon disks and two with drill steel disks.

To take care of future needs of the investigation it was decided that the committee ask the manufacturers to set aside one ton from a single melt of each kind of steel in the form of blooms or billets, the committee to be furnished with mill records of the various heats.



SPECIFICATIONS PREPARED BY THE GAGE STEEL COMMITTEE OF THE SCREW THREAD COMMISSION. TEST SPECIMENS OF THE THREADED AND CYLINDRICAL BLOCK FORMS ARE REPRODUCED

Reducing Losses in Steelmaking

Method of Comparing Total Combustion Efficiency of Iron and Steel Plant from Time to Time Is Proposed—Economic Use of Blast Furnace and Coke Oven Gas Presents Problem

BY F. G. CUTLER

IN ORDER to show the relative proportion of the energy in the form of heat or power required for the manufacture of steel that is utilized from the fuel by-products of the manufacturing process, the following figures have been prepared showing the quantity of heat derived from the by-products of the manufacture of pig iron.

In the production of one ton of pig iron, from under 1800 to over 3000 pounds of coke are used, this variation being due to difference in metallic content of the charge, condition of the furnace lining, quality of coke, etc. The heat energy of this coke is utilized in the reduction of the ore to pig iron and changing the impurities to a slag; a part is lost in radiation; and approximately half is delivered at the top of the furnace in the shape of gas for use under boilers for the production of steam, or in gas engines for the production of power. The gas has also been used in soaking pits, in by-product oven heating, ladle drying, etc. and other uses have been proposed, but by far the greatest quantity has been used under boilers. It has been only within the last few years that blast furnace gas has been considered to have any material value. In the past there has been no recognized method of determining whether or not a blast furnace plant has been guilty of wasteful practice, or if guilty, what the extent of this waste might be, and it is the intention of the author to propose a standard method of comparison of total combustion efficiency, both with the idea of determining for any particular plant the relative efficiency, from day to day or month to month, as well as for the comparison of one blast furnace plant with another.

In proposing this standard comparison reference is made to Fig. 1 which is taken from H. A. Brassert's paper on "Modern Blast Furnace Methods," published in the 1914 *Year Book* of the American Iron and Steel institute. This chart shows the effect of variation in coke rate upon the heat value of blast furnace gas at 62 degrees Fahr. As blast furnace gas leaves the top of the furnace it usually has a temperature of from under 300 to over 600 degrees Fahr. generally averaging about 400 degrees Fahr. At this latter temperature, the sensible heat of the gas is equivalent to about 8 B.t.u. per cubic foot of gas at 62 degrees. According to Mr. Brassert the B.t.u. per cubic foot of blast furnace gas is $62.5+0.016R$, where R represents pounds of dry coke per ton of pig iron. Including sensible heat of the gas at 400 degrees Fahr. this value would be $70.5+0.016R$. The cubic feet of gas per ton of pig iron, as shown by Mr. Brassert, is equal to $71.4R$, so that in the top gas from a furnace at 400 degrees Fahr. the B.t.u. per ton of iron is $1.142R^2+5022.7R$. Mr. Brassert also gives the cubic feet of air per pound of coke as $51.4R$, so that both gas production and the blast requirement bear a direct ratio to the coke consumption of the furnace per ton of iron. The figures given in Mr. Brassert's paper, so far as the author has been able to discover, are applicable to all blast furnaces using coke as fuel.

The blast is heated in stoves under pressure, and the heat required per cubic foot of blast is proportional to the rise in blast temperature in the stove, and inversely proportional to the efficiency of the stove, which is usually considered to average 60 per cent. After the necessary gas is used to heat the blast, the remainder can be measured in the form of power. Any increase in stove or boiler efficiency or reduction in leakage of gas, etc., is reflected in increased surplus power and as we are largely interested in the surplus power, after the blast furnace requirements are satisfied, any error in the assumptions relative to the efficiency of the stoves is of minor importance, particularly as the stoves use the smaller fraction of the total. The blast supplied from the blowing engines is heated by compression to about 150 degrees Fahr., varying somewhat with blast pressure, etc., and is usually heated in the stoves to from 1150 to 1350 degrees Fahr. In the following calculations it has been assumed that 0.02 B.t.u. are required per cubic foot of blast per degree Fahr., that the blast is heated in the stoves to 1250 degrees Fahr., that the average overall stove efficiency (i. e., ratio of heat given to the blast to the heat in the gas) is 60 per cent and that 55 cubic feet of blast are heated per pound of coke charged. The heat required in the gas for heating the blast for one ton of pig iron

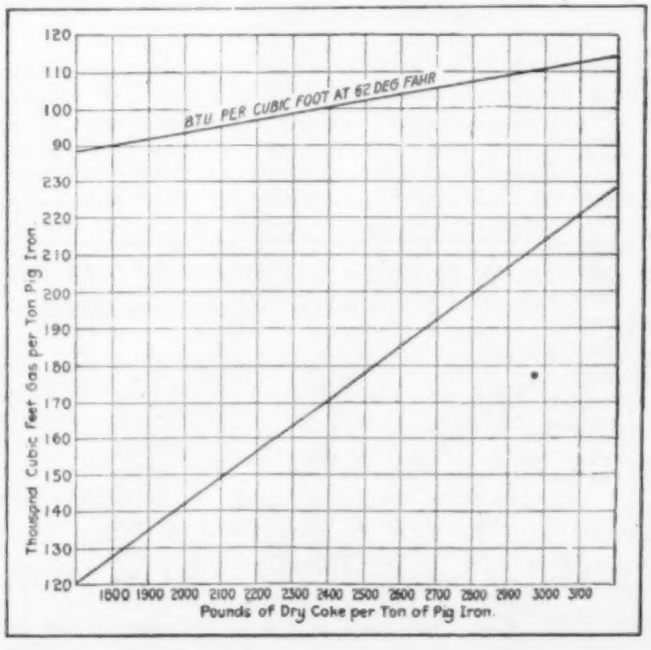


FIG. 1—EFFECT OF COKE RATE IN POUNDS PER TON OF IRON ON PRODUCTION OF BLAST FURNACE GAS IN CUBIC FEET PER TON

From a paper to be presented at the Atlanta, Ga., meeting of the American Society of Mechanical Engineers, May 8-11, 1922. The author is chief of the bureau of steam engineering, Tennessee Coal, Iron & Railroad Co., Ensley, Ala.

to a temperature of 1250 degrees Fahr. therefore can be expressed by the following formula, where H=B.t.u. per pound of coke burned in the blast furnace:

$$H = \frac{(1250 - 150) \times 0.02 \times 55R}{0.60} = 2020R$$

The heat in gas per ton product after the blast is heated, therefore, is $1.142R^2+3013.7R$. For other top temperatures and blast temperatures the constants will change slightly.

Heat Required for Gas-Fired Boilers

In order not to enter into the discussion of the relative merits of steam and gas engine, surplus uncooled gas, after the stoves are heated, will be assumed to be used under boilers. In one boiler horsepower-hour there are 33,305 B.t.u., and assuming that the "standard" efficiency of boilers using blast furnace gas is 66.6 per cent. in

$$\text{one boiler horsepower-hour } \frac{33,305}{0.666}$$

or 50,000 B.t.u. would be required in the gas, so that the boiler horsepower-hour per ton would be $\frac{\text{Surplus B.t.u. per ton iron}}{50,000 \text{ B.t.u.}}$. As the blast furnace product is usually expressed in tons per day the average boiler horsepower per hour generated from blast furnace gas under the above conditions can be expressed by the formula:

Average boiler horsepower per hour per ton of pig iron per day

$$= \frac{1.142\ R^2 \times 3013.7R}{50,000 \times 24}$$

In assuming the standard efficiency of 66.6 per cent for boilers and 60 per cent for stoves, it should not be understood that these are the maximum efficiencies that can be attained, but rather that they are taken as a standard for comparison and represent average practice that can be maintained in a fairly modern plant which is correctly designed, and which is operated by reasonably intelligent men.

Fig. 2 has been prepared from the foregoing calculations. The chart shows the per cent of top gas required for heating the blast to an average of 1250 degrees Fahr. with the stoves of 60 per cent total efficiency. This chart can be used by the blast furnace superintendent or engineer to determine the horsepower that should have been generated from gas for any period. From the actual results as shown by a meter on the boiler feed line, after deducting an allowance for steam generated by coal firing (usually small) or for gas used by gas engines, it will be possible to determine whether the total efficiency, including stoves and boilers, is above or below the standard.

The following table shows the boiler horsepower-hours per ton of pig iron for several coke rates as calculated from the above formula.

Pound of coke per ton	Boiler-horsepower-hours per ton product	Boiler-horsepower-hours per ton per day
2000	211	8.8
2200	242	10.1
2400	276	11.5
2600	310	12.9
2800	348	14.5
3000	386	16.1

To furnish the blast to the furnace with either high-pressure condensing, turbo-blowers or reciprocating steam engines requires about 70 boiler horsepower-hours per ton of coke burned in the blast furnaces, and to operate the various furnace auxiliaries, such as pumps, air compressors, steam bells, mud guns, hoists, etc., requires from 15 to 25 boiler horsepower per ton of product, so that after the furnace requirements have been met, there is available for the generation of power from 100 to 250 boiler horsepower hour per ton of pig iron, depending on the coke burned in the furnace.

At 2 kilowatts per boiler horsepower-hour, this means that a value of from 200 to 500 kilowatt-hours per ton of pig iron is possible with steam equipment from the surplus gas from the blast furnaces.

Heat Required for Steelmaking

The manufacture of steel from pig iron in the open hearth requires heat for melting scrap and fluxing the impurities, and power for the various operations incident to the melting and refining process. The quantities of heat and power required vary materially with different plants on account of difference in equipment, practice, etc., but for the purpose of this paper it will be assumed that a ton of ingots requires one ton of pig iron plus enough scrap to offset the losses and this work requires from 5,000,000 to 9,000,000 B.t.u. and an expenditure of from 20 to 30 kilowatt-hours per ton. It has been determined by experience that one ton of ingots will make about 0.85 ton of blooms, and the heating in soaking pits will require from 1,500,000 to 3,500,000 B.t.u. per ton of steel depending upon the temperature of the steel arriving at the pits, rate of operation, etc., and the rolling of the ingots into blooms will require from 40 to 60 kilowatt-hours per ton. From the blooming or slabbing mill the

Heat Balance for Manufacture of One Ton of Pig Iron

From the coke plant delivering 1 ton of coke there result the following fuel by-products for consumption in the steel plant after the heat and power requirements of the by-product plant have been met.

12 gallons tar at 162,500 B.t.u. per gallon, B.t.u.	1,950,000	
30 pounds of coke breeze at 12,000 B.t.u. per pound, B.t.u.	360,000	
10,000 cubic feet gas at 500 B.t.u. per cubic foot (net value) B.t.u.	5,000,000	
Total per net ton coke		7,310,000
Heat Available Per Ton Pig Iron		
	B.t.u.	B.t.u.
In tar from by-product plant	2,435,000	
In coke breeze from by-product plant	450,000	
In surplus gas	6,250,000	
Surplus from by-product plant		9,135,000
In blast furnace gas		19,635,000
Required for blast heating	5,000,000	
Required for blowing equipment	4,400,000	
Required for blast furnace operation	1,000,000	
Required for total blast furnaces		10,400,000
Surplus from blast furnace plant		9,235,000
Total heat energy from by-products		18,370,000
Heat Required for Steel Plant		
Open Hearth (Pig Iron and Ingots)		
Melting (Approx.)	7,000,000	
Power, 25 kilowatts at 25,000 B.t.u. per kilowatt-hour	625,000	
Total heat consumption		7,625,000
Roughing Mill		
Heating (approx.)	2,000,000	
Power, 50 kilowatt-hour	1,250,000	
Total		3,250,000
Finishing Mill		
Heating (approx.)	4,000,000	
Power, 100 kilowatt-hour	2,500,000	
Total for finishing		6,500,000
Total heating requirements	13,000,000	
Total power requirements	4,375,000	
Total		17,375,000

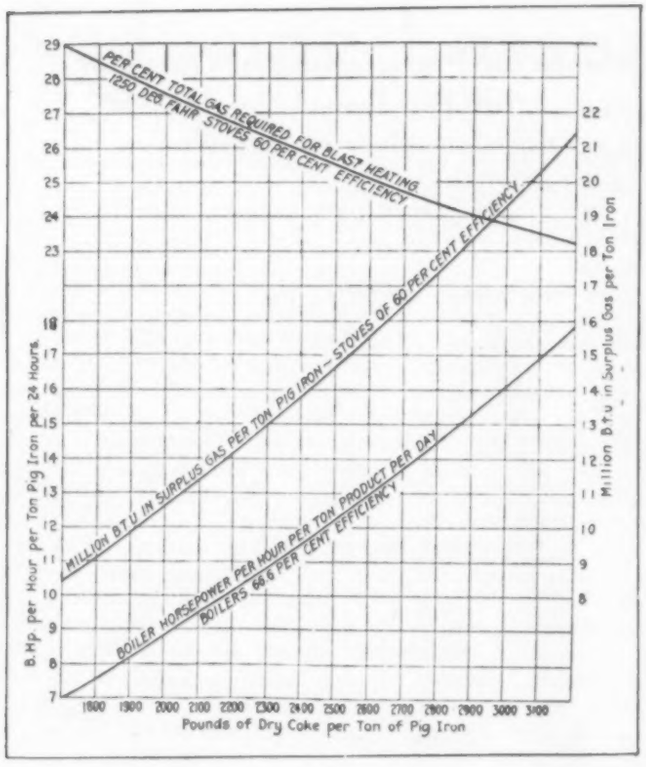

PER CENT TOTAL GAS REQUIRED FOR BLAST HEATING 1250 DEG FAHR STOVES 60 PER CENT EFFICIENCY
MILLION BTU IN SURPLUS GAS PER TON PIG IRON—STOVES OF 60 PER CENT EFFICIENCY
BOILER HORSEPOWER PER HOUR PER TON PRODUCT PER DAY BOILERS 66.6 PER CENT EFFICIENCY
B.Hp per Hour per Ton Pig Iron per 24 Hours
Million B.t.u. in Surplus Gas per Ton Iron
Pounds of Dry Coke per Ton of Pig Iron

FIG. 2—EFFECT OF COKE ON PRODUCTION OF POWER FROM SURPLUS BLAST FURNACE GAS

material, usually reheated at an expenditure of from 2,500,000 to 6,000,000 B.t.u. per ton, is furnished to finishing mills, the power required, depending on the reduction of section, temperature of rolling, etc., varying from 35 to over 300 kilowatt-hours per ton.

Utilization of Industrial Wastes

Waste heat from open-hearth and heating furnaces and kilns is utilized for the production of steam, and otherwise waste steam is utilized in low or mixed pressure turbines for the production of power, but as these subjects have been discussed many times, and are not peculiar to the steel industry, they will not be discussed except to say that while these economies are many times worth while in existing plants, few new installations as designed include waste-heat boilers with furnaces, or low-pressure turbines as integral parts of new power plants.

Surplus by-product gas, after the ovens are heated, is sold for use as domestic fuel, etc., replacing natural gas, water gas, etc., and is used in the steel plant for melting steel in the open hearth, and for various heating operations in the steel industry. In former years this material was considered as having only nominal value and it was but rarely that any attempt was made to utilize it efficiently.

With the advance in fuel prices, shortage of natural gas, etc., and also largely due to special heating requirements connected with the manufacture of artillery and ammunition during the war, a number of combustion systems were developed that by more or less accurately regulating the proportion of air to gas have greatly increased the combustion efficiency of heating furnaces, and the control of combustion has been found of great importance in maintenance of economy. Dust coke breeze from the coke plant (the material through a ⅜-inch screen) is used to cover molten pig iron in transit from the furnaces and in making bottoms of soaking pits and heating furnaces. A great deal of this material which was thrown away or more or less inefficiently burned on hand-fired grates or, by mixing with slack, on mechanical stokers, is now more efficiently burned by itself, on traveling-grate forced-blast stokers.

Tar, either before or after the creosote oils have been removed, has been found to be a good fuel for open-hearth furnaces, either by itself or in conjunction with by-product gas, and has been used for steam production either as an auxiliary fuel on blast-furnace boilers or by itself, and its use has been proposed to heat by-product ovens, thus releasing additional gas otherwise required for heating the ovens.

The accompanying table gives an example of the approximate heat balance of one ton of pig iron as used in the steel plant, using average figures, and based on an average coke consumption in the blast furnace of 2500 pounds of coke per ton of product.

It will be seen that the total heat from the by-products of a ton of pig iron is more than sufficient to finish the average ton of steel, but upon inspection of the table it will be found that the heating requirements have not been met from tar and by-product gas, while the average power requirements are more than met from blast furnace gas and coke breeze.

It therefore becomes desirable to reduce the heating requirements for production of steel by using more efficient heating furnaces, and to conserve all possible heat by charging hot steel into the soaking pit and reheating furnaces, in order to reduce the quantity of fuel required for supplementary heating.

The production of gas at the by-product plant is practically uniform, while the consumption at the steel plant is variable and as a result the gas pressure at the steel plant (usually some distance away from the by-product plant) is variable. As gas holders of sufficient capacity to absorb the fluctuations have not been found advisable it becomes necessary to schedule the use of gas by consuming departments in order partially to equalize the consumption. In many cases it is advisable to use by-product gas under boilers, although it is more valuable for other purposes in order to prevent or reduce its waste, as it is easier to change from gas to coal on boilers than it is to fire up producers.

One of the most important problems of the steel plant manager and engineer is so to regulate the production and consumption of the various fuels occurring as a by-product of steel plant manufacture that the consumption of raw coal in producers or under boilers that would otherwise be sent to the by-product plant is a minimum, for the reason that the by-products from the coal, coked in the by-product plant, usually exceed any possible return as fuel.

Values of British Imports and Exports Fall

According to official returns, British exports of iron and steel products in February, including scrap, were 228,370 gross tons compared with 261,119 tons in January, and 167,158 tons in February, 1921. British imports of iron and steel in February this year were 77,270 tons compared with 100,178 tons in January, and 181,565 tons in February, 1921.

The most striking feature of the February report is the great reduction in values, particularly in imports. The total value of imports in January and February 1921 was £6,601,320, while for the two months of the present year the value was £1,825,029. The value for February last year was £3,042,867 and for February this year £772,872.

The value of exports in January and

February, 1921, was £17,914,128 as compared with £10,525,069 in the same period this year. Values for February alone fell from £7,222,559 in 1921 to £4,665,353 in 1922. The following tables show imports and exports in detail:

IMPORTS

	Month ended February		Two months ended February	
	1921	1922	1921	1922
Pig iron:				
Forge and foundry	29,976	4,143	46,874	15,429
Acid	1,000	....	3,021	....
Basic	11,508	12,802	32,029	32,871
Ferroalloys	252	151	627	544
Steel ingots	1,994	78	4,481	1,724
Scrap	28,193	12,661	67,295	24,112
Blooms, billets, slabs:				
Iron	1,712	50	2,993	57
Steel	19,334	7,901	45,591	18,296
Bars, rods, angles shapes, etc.:				
Iron	15,748	6,278	31,281	13,380
Steel	12,043	6,737	18,175	14,062
Steel:				
Wire rods	1,225	3,017	5,825	6,244
Other steel	11,165	3,523	22,528	6,270
Special steels	121	114	167	132
Castings, iron	1,231	250	2,430	884
Castings, steel	512	403	983	712
Forgings, iron	279	29	699	57
Forgings, steel	63	31	81	148
Steel girders, beams, etc.	2,794	2,140	5,869	4,316
Hoops and strips	2,915	829	5,409	1,219
Plates and sheets	22,810	2,223	41,549	5,515
Cast tubes, pipes and fittings	1,840	1,244	3,527	2,630
Wrought tubes, pipes and fittings	1,674	1,527	6,812	3,957
Rails for trams	2,066	25	4,171	373
Railway rails	1,723	1,229	2,743	2,453
Tires and axles	10	18	10	110
Railway material, other types	945	486	1,846	1,306
Wire	2,867	2,223	6,528	5,281
Wire nails, including staples	2,306	3,525	7,848	7,619
Wire manufactures:				
Other sorts	264	433	414	919
Nails and tacks	413	371	761	657
Bolts and nuts	766	387	1,821	720
Hollow ware	720	1,034	1,475	2,392
Manufactures of iron and steel other sorts	1,096	1,408	2,644	3,068
Total, including scrap	181,565	77,270	379,510	177,443

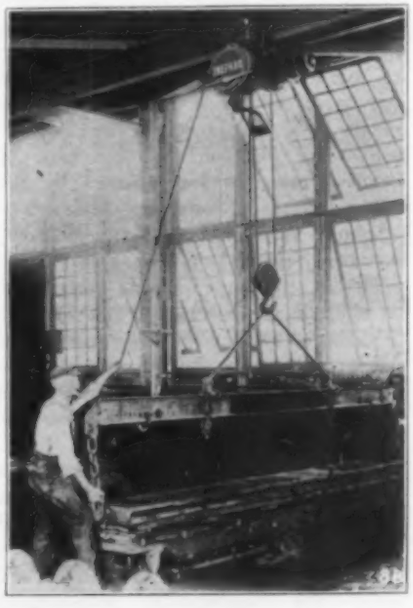
EXPORTS

	Month ended February		Two months ended February	
	1921	1922	1921	1922
Pig iron:				
Scrap	....	4,754	....	....
Forge and foundry	4,713	15,290	11,725	25,455
Acid	6,990	20,070	13,380	33,614
Basic	130	22	289	722
Ferroalloys	2,182	7,890	8,707	13,931
Steel ingots	51	....	51	25
Blooms, billets, slabs	85	318	211	733
Bars, rods, angles, shapes, etc.	18,301	12,856	41,509	30,806
Castings, iron	52	23	112	66
Castings, steel	31	6	66	86
Forgings, iron	2	1	30	14
Steel girders, beams, etc.	3,944	3,737	11,292	8,029
Hoops and strips	2,684	2,724	6,324	7,101
Plates and sheets, not galvanized:				
Armor plates	....	179	....	1,325
Plates and sheets not under ⅛-inch thick	23,060	6,624	49,378	11,475
Plates and black sheets under ⅛-inch thick	4,334	10,686	9,959	17,489
Black plates	830	4,021	2,250	6,664
Plates and sheets, coated:				
Galvanized sheets	8,017	37,795	27,791	93,355
Tin plate	21,518	34,802	55,340	69,077
Cast tubes, pipes and fittings	7,292	5,497	14,326	8,988
Wrought tubes, pipes and fittings	8,190	5,585	20,141	10,230
Rails for trams	597	274	3,805	537
Railway rails	15,337	18,173	33,290	54,101
Sleepers and fishplates	5,109	10,185	14,565	23,712
Tires and axles	2,386	1,228	5,145	2,812
Wheels and axles	2,174	1,602	6,496	4,247
Railway material, other types	4,288	2,122	7,457	5,317
Wire	2,542	2,407	7,563	5,651
Wire manufactures	1,968	2,029	4,506	3,785
Nails and tacks	1,025	712	2,350	1,726
Wood screws	215	202	592	365
Bolts and nuts	1,781	805	3,602	2,165
Manufactures of cast iron	1,761	1,004	4,070	1,979
Anchors, cables and chains	1,365	718	3,490	1,901
Bedsteads and finished parts	376	438	1,262	970
Hollow ware	945	665	2,605	1,343
Other manufactures of iron and steel	12,207	12,846	24,855	26,899
Total, including scrap	167,158	228,370	400,272	489,489

Small Electric Hoist Is Controlled by Hand

To provide an electric hoist for small and medium loads is the purpose of a small general utility hoist recently announced by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. It is claimed that it can be applied to advantage in lifting anything within its capacity and carrying it practically any place. Heretofore, the impression has prevailed to a certain extent that an electric hoist could be used only for big, heavy rehandling jobs. The hoist shown in the accompanying illustration is particularly designed for and suited to all the usual lifting jobs encountered in factories, mills and warehouses. Wherever hand labor now is employed for lifting or carrying it is stated that this hoist affords more economical means of doing the work.

It can be operated wherever electric current is available and easily may be installed on the side of a building, on the ceiling or in any location that will bear the weight of a load. The track may be extended to various points making possible the moving of a load quickly from place to place or direct to shipping platform. The overhead track takes up no valuable floor space. An overhead structure economically may be erected for out door or yard use.



SMALL HOIST DESIGNED FOR AUXILIARY SERVICE

Choosing Rods for Oxy-Acetylene Welding

(*Concluded from Page* 1036)

available through the exchange and assembling of information and test data. This need of standardization has been met by the American Bureau of Welding with carefully prepared specifications for testing welds, such that entirely comparable results will be obtained by experimenters who follow these specified methods of testing. The tests included are tensile, bending, fatigue, impact and metallographic.

Examination by X-rays is a new method of studying welds that of late has received considerable attention. Any slag inclusion, blowhole, or interface in metal up to two inches in thickness may be detected by this radiographic examination. The particular advantage of this method is that the quality of the weld may be determined without the destruction of the weld as is the case in other tests.

The metallurgical microscope is almost an unfailing aid when a study of the physical properties of a metal is undertaken. The examination of the entire surface of a large metal section at high magnification is tedious and points of greatest importance might frequently be missed. The study of microstructure has been developed to help in avoiding these difficulties.

The metal section is polished and etched, and examination at low magnifications or with the unaided eye will disclose defects or non-uniformities in the composition or structure of the specimen. Once the interesting or unusual features are located the examination at high power may proceed directly to the proper locations.

Indict Theater Builders

A federal grand jury has returned indictments charging manslaughter against R. W. Geare, architect; John H. Ford, steel fabricator; J. R. Dowman, assistant building inspector; R. F. Flecher, foreman for mason and cement subcontractor and D. M. Wallace, general foreman for general contractor, as a result of the collapse of the Knickerbocker theater roof in Washington on Jan. 28.

Producing Synthetic Pig Irons

By Properly Selecting Scrap and Manipulating Furnace a Wide Range of Steel-making and Foundry Irons Can Be Made—Large Furnaces Are Recommended—Chemical Control Essential

BY CHARLES-ALBERT KELLER

SYNTHETIC pig iron is the term given to the pig iron obtained by the recarburization in the electric furnace of iron and steel scrap, such as turnings, borings, bar ends, etc. The essential condition of the process consists in obtaining the carburization of a preliminary mixture of scrap and coal. A complete absorption of the carbon is thus effected, and if the mixture of this element is well controlled the operation owing to the neutral character of the source of heat, will produce a carburization which is absolutely constant, as from a chemical point of view nothing can intervene to counteract the process of carburization.

This method of procedure makes it possible to secure continuous action in the electric furnace. By means of a simple operation requiring no skilled workman, we obtain a pig iron of constant carbon content all its constituent elements other than the iron and carbon being dependent upon the particular quality of the scrap and the purity of the coal.

The combination of the carbon with the iron begins to take place in the upper portion of the charge well before the melting. Cementation commences at 650 degrees Cent.; it acts more rapidly as the temperature rises.

The carburization of the iron is then continued by the contact of the solid carbon with the metal in course of fusion, partly carburized, and is completed at fusion point, which is thus determined at the particular temperature of the pig iron, so that castings are easily obtained at about 1200 and 1300 degrees.

In view of the nonoxidizing nature of the operation the desulphurization will proceed quite naturally if care be taken to render the slag basic by the addition of lime. The carburized metal will then emerge perfectly mixed with carbon and desulphurized; the silicon and manganese content will be practically that of the scrap; the phosphorus content will correspond to the total amount of phosphorus introduced by all the imgredients of the charge.

It is evident that the fusion, being effected as has just been described, can only be desulphurizing, all the phosphorus remaining in the pig iron. In practice the operation is rather more complex, though still remaining very simple.

The resistance of the charge composed of the scrap, the coal and the small quantity of lime necessary for desulphurization is too low, and the operation therefore causes continual variations in the flow of the electric current.

To make use of the voltages usual in electrometallurgical works (40 to 50 volts per arc), it is therefore necessary to interpose in the arc a layer of slag through which the arc is produced between the electrode and the layers of liquid metal. In this way the arc is "throttled" and regulated. This requirement of electric working therefore makes it necessary to introduce a basic slag in the proportion of 50 to 100 kilograms per ton of metal into a charge composed of the usual materials.

For foundry pig iron it will be necessary to increase the silicon or manganese in the scrap. Silica and coal must therefore be added to the charge to obtain the silicon; and manganese oxide and coal for the manganese addition. These additions will exactly correspond with the usual calculations.

However it should be stated that the carbon in the charge must be utilized for the carburization of the iron and the reduction of the oxides, and that its utilization as between the two will vary in accordance with the composition of the slag accompanying the operation. The silica in the slag may, in fact, be more or less affected by the carbon, and as a result the silicon content may vary uniformly with the carburization of the pig iron.

This is the most delicate metallurgical point in the operation. With a well-compounded slag and a well proportioned amount of carbon, the reduction of the silica is kept absolutely constant, and in an electric furnace of a specific power obeys a fixed law.

In brief, the mechanism is exact and certain, but necessitates perfect mixtures based upon a rigorous analysis of all the components.

Everything in this process, over and above the fundamental metallurgical laws that have to be observed, is dependent upon the meticulous care that must be given to the composition of the charges. In a word, the metallurgical result is entirely dependent upon the chemical laboratory.

The constancy of the results will also depend upon the volume of the mass under treatment. An electric furnace which is too small will not give so great a constancy of content as a large one. Therefore working with small furnaces should be avoided, as their slightest variation in action has an immediate reaction on the metallurgical results. In the works at Livet, with a furnace of 60 to 80-ton capacity a day, the writer has observed a uniformity in output characterized by variations in carbon and silicon which do not exceed a limit of 0.25 per cent.

Synthetic pig iron may be at least as constant in its composition as any other pig iron, for the process permits of great precision in manufacture. Nevertheless, it may be heterogeneous in composition if produced in furnaces of too small capacity without "play" and also, it is hardly necessary to say, if the composition of the materials constituting the charge is not perfectly controlled and accurately maintained.

Some time ago the writer obtaind direct and precise particulars of an electrometallurgical works which had undertaken the manufacture of synthetic pig iron and was delivering a considerable quantity. Small furnaces of a capacity of 5 to 6 tons per day were employed; the charge was made by volume and when the metal came out pasty for casting, coal by the shovelful was added at random to the furnace crucible to remedy this state of affairs. At each casting the furnace crucible was almost entirely empty of material. It is evident that this method of procedure must have produced as many compositions of pig iron as there were castings. I may add that all the castings were stacked without being graded.

As has been indicated, pig irons obtained by the process of desulphurization will contain, as minimum, all the phosphorus, silicon and manganese contained in the materials composing the charge. The silicon and manganese may be regarded in practice as below 0.80 per cent in ordinary steel turnings. These turnings will give a pig iron with a 0.10 to 0.15 per cent phosphorus con-

From a paper presented at the recent foundry congress at Liege, Belgium. The author is managing director, Societe des Establissements Keller et Leleux, Livet, Isere, France.

tent. Therefore with ordinary steel turnings the desulphurization process will enable pig irons to be obtained of the following specification: Carbon, mixed as desired to saturation; silicon and manganese, each under 0.80; phosphorus, 0.10 to 0.15 per cent; and sulphur, trace. These pig irons will be specially suitable for mixing. Their mechanical resistance is good and they are perfectly suited for improving high phosphorus pig or counteracting the introduction of scrap, if they are sufficiently silicated.

A silicon content of 2.75 per cent is also desirable for certain purposes. To obtain such a pig iron of maximum strength, 2.80 to 3 per cent of carbon should not be exceeded. The composition then will be: Carbon, 2.80 to 3; silicon, 1.80 to 2; manganese, under 1; phosphorus, approximately 0.15 per cent; and sulphur, traces.

This pig iron will be equal to a minimum tensile resistance of 25 kilograms per square millimeter and an impact test of 18 blows with the drop test machine (railway test).

If the synthetic pig iron is mixed with cast machinery scrap such as that expressed by the analysis: Carbon, 3.20 and silicon 1.75 per cent, and if it is desired to obtain the best possible strength, it will be well to give this pig iron the following content: Carbon, 2.80 to 3 and silicon, 2.75 to 3.25 per cent.

The ascertainment of the approximate composition of the scrap is too often neglected and the fact that melting lowers silicon owing to the oxidation resulting from passing through the cupola is too often overlooked. The oxidation varies with the type of cupola but it may be estimated as equivalent to about 0.20 per cent of silicon.

Apart from the use of a pig iron with 2.75 to 3.50 per cent silicon which is regenerating, a stronger pig iron containing 6 to 8 per cent of silicon may be successfully employed. This is greatly to be recommended as its silicon is more stable than in richer mixtures and combines better with the ingredients of the charge in fusion.

It need hardly be stated that the entire range of pig irons below or above 2.75 to 3.50 per cent of silicon can be obtained at will from the electric furnace (always corresponding of course to about 0.15 per cent of phosphorus) when ordinary steel turnings are employed.

Pig iron from scrap will differ from those already described only in phosphorus content. This is important, for as a result of this alone manufacturers can produce bessemer or forge iron. The bessemer iron analyzes, carbon, 3.25 to 3.5; silicon, 3 to 4; manganese, under 1; phosphorus, under 0.07 to 0.08 per cent; and sulphur, traces. Pig irons for refining analyze carbon, 3.25 to 3.75; silicon, 1.50 (maximum); manganese, 2.5 to 3; phosphorus, 0.10 to 0.08 and sulphur, traces.

Pig irons for special uses can be mixed in the light of the considerations already indicated as regards carbon, silicon and manganese, and are characterized by a purity of 0.03 to 0.06 of phosphorus according to the quality of the scrap used. For these the use of charcoal is recommended for carburization. The dephosphorization and desulphurization process requires two operations. The first consists of oxidizing and dephosphorizing. Properly carried out this operation produces a low phosphorus content (0.01 to 0.03 per cent) and simultaneously oxidization of the silicon, manganese and carbon. Therefore it is well to recarburize the intermediary metal in the second phase while at the same time mixing it with silicon and manganese. Pig irons thus obtained are comparable in quality with charcoal pig iron made from the finest ore.

This double operation makes it possible to contemplate the production of every quality of fine pig iron and malleable pig iron. The metallurgical treatment obviously becomes more complex and more costly.

If we consider that synthetic pig iron has not only maintained its price in the market but greatly influenced prices in France during the last few months, we are bound to recognize that it has been taken into serious consideration by many steel workers and foundrymen. There is no doubt that recognition of the value of its different grades will become more general.

Electrometallurgical works manufacturing the various kinds of synthetic pig iron must have at their disposal a chemical laboratory with considerable and appropriate resources, as well as a laboratory for metal tests. These works may render service to foundries, not only in supplying material but in acting as metallurgical advisors.

German Machine Tool Exports Decline

That there has been a considerable decline in Germany's exports of machine tools during 1921 as compared with 1920 and 1913, is shown by figures compiled by William Althoff, assistant chief of the industrial machinery division of the bureau of foreign and domestic commerce, United States department of commerce. The figures are from German customhouse returns for the seven months from May to November, 1921, and the entire year 1920. Figures for the first four months of 1921 have not as yet been published.

In referring to the figures it should be borne in mind that the German classification of machine tools is extremely broad and includes metalworking, woodworking, and stoneworking machinery, as well as hydraulic presses, riveting machines and power hammers. A total of 39,046.1 metric tons of tools were exported from Germany during the year, the figures show. Exports for 1921 as compared with 1920 are as follows:

	1920	1921
Belgium	7452.7	7547.7
Denmark	2806.6	780.8
Alsace-Lorraine	1827	468.4
France	13668.3	5087.9
Great Britain	1619.7	1057.7
Italy	7546.3	3466.7
Netherlands	19054.1	4559.3
Norway	1535.1	360.6
Austria	4978.7	2823.7
Czecho-Slovakia	3360.4	1796.6
Sweden	5433.5	533.3
Switzerland	11760.7	1738.5
Spain	3268.9	1238.4
South America	2949.4	1582.8
Other countries	7659.8	6003.7
Total	94921.2	39046.1

Figures in metric tons.

South American consumption and a comparison of the prewar and postwar returns is afforded by the following figures:

	Total German exports	South American imports
1911	64,851	4043
1912	77,283	5318
1913	90,279	4869
1920	94,921	2949
1921	*39,046	*1583

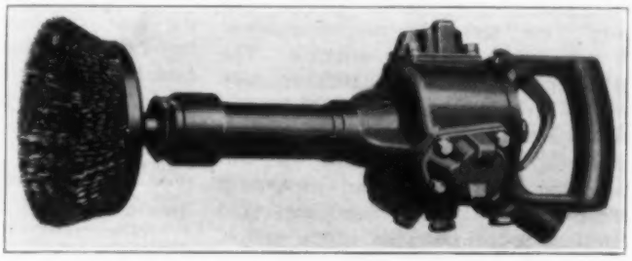
*From May 1 to Nov. 1.
Figures are in metric tons.

Taking the total of 39,046 metric tons applying to the seven months of 1921 and employing the same ratio for the missing months, 1921 would give a total of approximately 67,000 metric tons, indicating a substantial falling off in volume as compared with the years 1920 and 1913. It is interesting also to observe that while Germany's total exports of machine tools during the years preceding the war show a large and steady growth, the experience after the war has been quite the reverse.

The figures show to what extent Germany is dependent on its European neighbors as customers. They also show that German exports of tools to other parts of the world are much less than is commonly supposed. South American imports of German tools declined from 4869 metric tons in 1913 to 2949 in 1920 and an estimated total of 2700 tons in 1921. In addition to this, South America's percentage of participation in Germany's total was much lower during 1920 and 1921 than during the several years preceding the war. According to a recent survey based on an actual census of 460 machine shops located in South America, 39.3 per cent of the machine tools in South America before the war came from the United States and only 13.4 per cent were made in Germany.

Develops Revolving Wire Brush for Cleaning

Practice has demonstrated that for rapid cleaning of metal surfaces, such as removing of paint, rust, dirt and scale from tanks, steel cars, structural steel forms, etc., a wire brush turning at high speed cleans more rapidly than a brush revolving at lower speed. To supply this need, the Ingersoll-Rand Co., 11 Broadway, New York, recently has introduced a high speed cleaner having a maximum speed of 4200 revolutions per minute. This machine is shown in the accompanying illustration. The air motor is of the 3-cylinder type used in the portable grinder and is well balanced to minimize vibration. To attain light weight, the cleaner casing is made from aluminum, with cast-in steel bushing inserted. The weight of the complete machine is 14 pounds. It is 17½ inches long and operates a brush 6 inches in diameter. At 90 pounds per square inch air pressure, the average free speed is 4200 revolutions per minute.



AN AIR-DRIVEN REVOLVING WIRE BRUSH WHICH OPERATES AT HIGH SPEED

More Steel Shipments by River Started

Shipments of various steel products by river left Pittsburgh last week for Louisville, Ky.; Evansville, Ind.; St. Louis, and Memphis Tenn.

The tow consisted of eight barges of steel products, made at the plant of the Jones & Laughlin Steel Co., which adopted river shipment of steel last fall in order to combat existing all-rail freight rates, for the benefit of customers in the southern and southwestern districts.

It is the company's intention to operate its river shipping on monthly schedules. Tonnage for the May tow will exceed that of April.

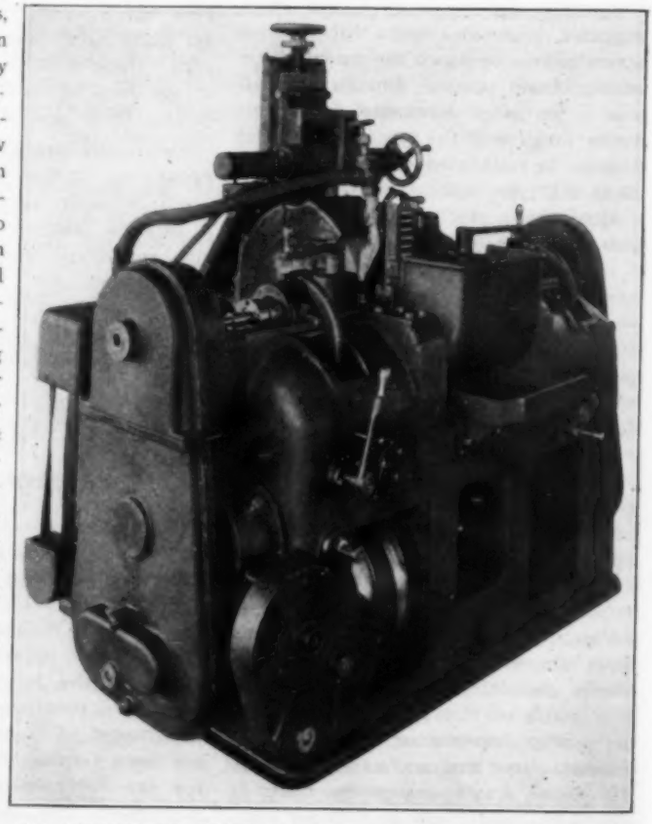
Japan Drawing on Own Iron Ore Reserves

Settlement of the Shantung question has rendered it inadvisable for Japan to rely upon Shantung's large resources of iron ore. To make up for this loss the government steel works is exploiting two iron mines on the coast of the Sea of Japan, which Japan has kept as a reserve. One, the Akaya mine has deposits estimated at 2,000,000 tons. The other, the Aogadake, is estimated to contain 3,000,000 tons of workable ore. Railway lines are being laid between the mines and the port of Niigata, where two freightrers of 3000 tons each will be engaged in transporting the ore to the steel works.

The rolling mills are being electrified to save expense of production. The government's policy is to accept as many orders as possible from merchants and to check the ever-growing import trade.

Builds Full Automatic Grinding Machine

For grinding cylindrically machine parts on centers, a new full automatic plain grinder has been developed by the Warren B. Fraser Co., Westboro, Mass. All parts are ground on centers, or in drawing-in chucks. Simplicity is one of the features of the machine, a front view of which is shown in the accompanying illustration. To provide strength where it is needed and to absorb effectively the vibration of moving parts, the grinder has been massively constructed. The weight of the machine is approximately 7000 pounds. The wheel head is heavy and designed to carry a grinding wheel 18 inches in diameter and up to 6 inches in face. Lubrication is supplied by a forced feed system to all bearings, a visible oil level being provided. All controls are conveniently located. Power for operation may be supplied either by a 15-horsepower motor with a 4½-inch belt or from an overhead counter or jackshaft with a constant speed driving belt. It is claimed that the machine is adapted particularly to quantity production, average sized parts being turned out rapidly. One operator can run from one to four machines. Included in the work which the machine will accommodate are shafts, shackle bolts, king bolts, valve tappets, piston pins, telephone receivers, fountain pen barrels and caps and a wide range of various machine parts from ½-inch diameter upward and having a maximum length of grind 6 inches and a maximum length between centers of 10 inches.



AN AUTOMATIC GRINDING MACHINE WELL ADAPTED TO QUANTITY PRODUCTION

The Worcester, Mass., chapter, American Society for Steel Treating, held its first annual meeting and banquet March 20, when the following officers were elected: Chairman, J. E. Rogers; secretary-treasurer, William Bacon; executive committee, G. C. McCormick, P. H. Knowles, Victor E. Hillman and John C. Spence. Speakers at the banquet were Dr. John A. Matthews, president of the Crucible Steel Co. of America, Pittsburgh, and E. P. Gilligan, Hartford, Conn., president of the American Society for Steel Treating. Victor E. Hillman, retiring chairman, was toastmaster.

Handling Expenses of Idleness

Various Problems in Connection with Idle Facilities Are Discussed and Suggestions Offered for Computing and Disposing of These Charges—Management Must Decide Whether Expense Is Part of Production Cost

BY T. W. DINLOCKER and A. W. WAINWRIGHT

THAT there is in industry such a thing as expense of idleness is generally conceded and this paper is a discussion of abnormal idleness due to business depression. Much discussion has followed the publishing of a paper by the same authors bearing particularly on computation and disposition of this expense. The majority seem to advocate excluding from cost the expense of idleness. A wider difference of opinion exists as to the most equitable method for computing this expense.

The writers are of the opinion that the treatment of idle facilities expense is a principle and not a fixed formula. So far as disposition is concerned, it is felt that this depends upon the decision as to whether or not it is to be included as a part of cost. Regardless of all other considerations, the first step in connection with the expense of idleness is the matter of definitely determining whether or not this expense is to be carried as a part of cost. After this decision is made the matter of reflecting it in the accounts becomes rather simple. Since this decision rests with the management, it will not be further discussed but some of the considerations in connection with computation will be considered.

To compute correctly the expense of idle facilities, two factors must be determined as follows: 1. Measure of idleness; and 2. the overhead eligible for relief. Idle facilities may be measured by machine-hours, man-hours, or production. Decision should be based upon conditions existing in the particular industry.

Overhead Costs Are Specified

Eligible overhead consists of those expenses which accrue regardless of idleness or activity and are uncontrollable. A representative list of such expenses follows: Depreciation, taxes, rent, insurance, factory protection, and supervision. When methods of overhead distribution are used which are not based on predetermined machine rates or fixed overhead percentages, the expense of idleness is removed from the overhead, after which the adjusted overhead is applied to costs.

The writers do not wholly concur in the theory that the expense of idle facilities should be determined by either of the following methods:

1. Multiplication of total machine-hours burden rate by idle machine hours.

2. Excess of actual burden over predetermined burden or, in other words, excess of debits over credits in the reserve for overhead account.

Two reasons are advanced for this viewpoint, namely:

1. Inaccuracies in forecasting.

2. Consideration of distinction between fluctuating and nonfluctuating items.

The reason for this is that many concerns have used with success various predetermined methods of distributing overhead when the above points have been taken into consideration.

When predetermined rates or percentages of overhead distribution are used, the expense of idleness is removed from the reserve for overhead account because the expense is reflected there and not in the overhead chargeable to costs. Such systems contemplate charging to costs only that proportion of the overhead which is earned, the contra entry being made to the reserve for overhead account. The actual overhead expense is charged to the reserve for overhead account, contra entries being made to various cash and accrual accounts. During normal times, as the rates were correctly predetermined, there should not exist any large differences in the reserve for overhead account.

During periods of depression, the charges to the reserve will exceed the credits because the credits are based on activity of working units; whereas, the debits are based on fixed charges for idle units as well as working units. If at the time the predetermined rate was constructed, it was contemplated to make provisions for expense of idleness over a period and sufficient time had elapsed before the advent of depression, we might encounter a condition where the reserve for overhead had sufficient credit to absorb the expense of idleness.

One writer advocates using the monthly balance in the reserve as the expense of idleness. Providing there is no error in the predetermined rates, this practice will prove satisfactory over a period of time. The objection to this method is found in the fact that controllable overhead fluctuates from month to month and, in some cases, not in proportion to production. The credits to the reserve contemplated spreading such items of overhead over a reasonable period. Fluctuations probably will be found in such accounts as repairs. In a given month the actual repairs might be unusually heavy and in such a case the balance in the reserve would be large. Consequently, the expense of idleness under this method would be a high figure. In the following month there might be a considerable decrease in such items as repairs with the result that it might even be necessary to make credit to the charges for idleness previously secured through the method of considering the balance in the reserve as expense of idleness.

Advanages of System

The operating officials therefore could be presented with figures from month to month of widely fluctuating volume. Providing there are no errors in the predetermined rate, the balance in the reserve account over a period of time will resolve itself into the expense of idleness by equalizing these periodic fluctuations.

Another writer advocates computing the expense of idle facilities by the multiplication of total machine burden rate by idle machine-hours. The total machine rate makes a provision for expenses which fluctuate with production as well as those which do not fluctuate with production. If it is desired to compute idleness expense by use of machine burden rates, it is necessary to analyze the rate into its elements and distinction made between the controllable or fluctuating and uncontrollable or nonfluctuating items. The expense of idleness could then be computed by multiplying the total of the uncon-

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From an article published by the Industrial Cost association, New York, and presented before the Cleveland section, March 21. Of the authors, T. W. Dinlocker is assistant comptroller, S. K. F. Industries, Inc., New York, and A. W. Wainwright is works auditor, Skayef Ball Bearing Co., Hartford, Conn.

trollable items in the machine burden rate by the abnormal idle hours.

If the machine burden rate includes uncontrollable items only, such as depreciation, rent, taxes, etc., the expense of idle facilities could be computed on the total rate. The rather important need for making this distinction is brought out in an example which was used by the writer just quoted: The example in question was stated as follows:

A. Predetermined monthly charges	$10,000.00
B. Normal capacity machine-hours	10,000.00
C. Predetermined machine hour rate.	1.00

All controllable and uncontrollable expenses were included in the predetermined monthly charges. The normal capacity of 10,000 hours excluded normal idleness as it is not reasonable to expect that each machine would operate 100 per cent of strictly possible hours. During the period in question, the plant was operated at 80 per cent of normal capacity or 8000 machine-hours. Consequently, $8000.00 of the predetermined monthly charges were accounted for by job cards and applied to costs.

The statement was made that the balance of $2000 constituted the expense of idle facilities, which was made up of 2000 idle machine-hours times the machine-hour of $1.00. Since the author quoted did not indicate in his example the percentage of controllable and uncontrollable items in the machine rate, the writers will assume they were divided equally, namely, 50 per cent controllable and 50 per cent uncontrollable.

The present writers claim that the expense of idleness should have been computed by multiplying the total of the uncontrollable items in the machine burden rate by the abnormal idle hours, which in this particular case, would be 50 cents multiplied by 2000 idle hours or $1000.00.

Assuming there were no errors in the rate the example is proved by the following:

Total expenditure for uncontrollable items, 10,000 machine-hours x 50 cent machine rate	$5,000.00	
Total expenditure for controllable items, 8000 machine-hours x 50 cent machine rate	4,000.00	
Total expenditures for month charged to reserve for overhead		9,0000.00
Credit to reserve for overhead for 8000 machine-hours operated x $1 machine rate which per contra was charged to costs		$8,000.00
Excess debit in reserve for overhead which represents uncontrollable items as depreciation, rent, taxes, insurance, etc.		$1,000.00

This $1000.00 represents 2000 idle machine-hours times the 50 cent rate for uncontrollable items. If the credit of $2000.00 had been made to reserve for overhead as recommended by the author quoted, there would have been an excess credit of $1000.00 which would represent the amount of estimated overhead of controllable items that would not have been incurred. Included in this amount would be such items as nonproductive wages, nonproductive material, power, trucking, inspection, etc., which are controllable by production.

Distributing Costs Over Orders

The author stated further that if it was desired to include the expense of idleness in costs it must be distributed over the orders worked on by the following method:

Divide the total accounted for cost ($8000.00) into the cost of idle time ($2000.00). This results in a factor of 25 per cent which is the amount by which the cost of each job, as shown by the job cards, must be raised in order to absorb the entire cost. Although the writers feel that the cost of idleness at $2000.00 may be overstated, nevertheless they agree with the author that the method is correct providing it is the desire of the management to include current expense of idleness in costs under the machine rate burden method without provision being made in advance for this expense.

If the cost in the above example had been increased by $2000 as advocated by the author, the writers believe that the resulting cost figure would be inflated to the extent of that portion of the machine rate which was of a controllable nature and as such might not have been incurred.

In one instance the writers have observed the failure of providing relief based on output or production. The plant in question was normally producing 100,000 units and this quantity was decided upon as the standard or possible production. The relief for idle facilities was based upon the percentage that the decrease in production bore to the standard production. This percentage was applied only to uncontrollable overhead and the error made was not in that connection. A new product was developed and found a ready market, although the old product was not obsolete. While the new product was somewhat similar to the old, it was found that the equipment could not be entirely used in producing the new product even though the demand for the new product exceeded the supply.

Efficiency of the manufacturing organization increased production approximately 50 per cent or 150,000 units, exclusive of the idle equipment suitable only for the old product. In view of production exceeding the normal or standard no relief was made to overhead. While the increased units decreased costs, the true result was not shown because a further decrease should have been made for the expense of idle equipment not used and suitable only for the old product. It does not seem reasonable to burden the new product with the illeness expense directly attributable to the old product.

Even though revised standards of production are made, influence of varying production of these products will effect overhead if relief is based on production units. The management, realizing that this condition did not reflect the true cost of each product, revised the method of computing idleness expense. After investigation of various methods possible, decision was rendered in favor of facility-hours as the measure of idleness.

Another factor that should be taken into consideration, when relief for idle facilities is based on production, is inefficiency of the workers. The monthly production standard might be 100,000 units and the output 50,000 units with facilities operating 75 per cent capacity. In this example, computing relief on the basis of production would result in 50 per cent relief. Computing relief on the basis of facility-hours, the relief would be 25 per cent. The latter method reflects in costs the inefficiency of workers, whereas the former removes it from costs and includes it in the expense of idle facilities. In industries where output is not controlled by man-hours or facility-hours, the method of basing relief on production might prove satisfactory.

This will conclude the discussion on computation and we shall now take up the subject of disposition or reflecting the expense of idleness. As before stated this section of the subject is a matter for decision on the part of the management. If it is decided to leave it in costs, no further disposition necessarily is required. If it is decided to remove it from costs, it still remains a question for the management to determine, whether or not it will be charged direct to profit and loss, surplus, or a reserve for idle facilities. Of course, expense for idle facilities could not be charged to a reserve for idle facilities account unless provision previously had been made for it.

This brings up the question as to whether the periodic accruals to reserve shall be charged to cost or to miscellaneous deductions from income, which as has been expressed previously, is the first question to be de-

cided, namely, "Shall expense of abnormal idleness be absorbed in cost?"

In discussing the problem of idleness no set rule can be laid down that will express sufficient elasticity to enable it to be applied without some adjustment. The problem as has been discussed may be summarized briefly as follows:

1. When the question of expense of idleness arises in an organization certain definite steps should be taken.

2. The first step is to determine a reasonable basis for computing the amount of this expense.

3. To compute this item it is necessary to secure some means by which the measure of idleness may be gaged. This is no mean task but it is essential. Facility-hours are recommended for this purpose but man-hours or volume of production may be considered.

4. The measure of idleness is secured by comparing it to the possible capacity. This possible capacity is the volume of facility-hours, man-hours or production which a plant may consume or produce when working full time.

5. Having secured the measure of idleness by establishing its relation with possible capacity, we have the percentage which is applied to expenses we are to relieve.

6. These expenses for the most part should be those only which do not fluctuate with production and should not contain those that do fluctuate with production. This is taken on the theory that the management should see to it that the fluctuating expenses are held to such a minimum that their relation to production is in the proper proportion.

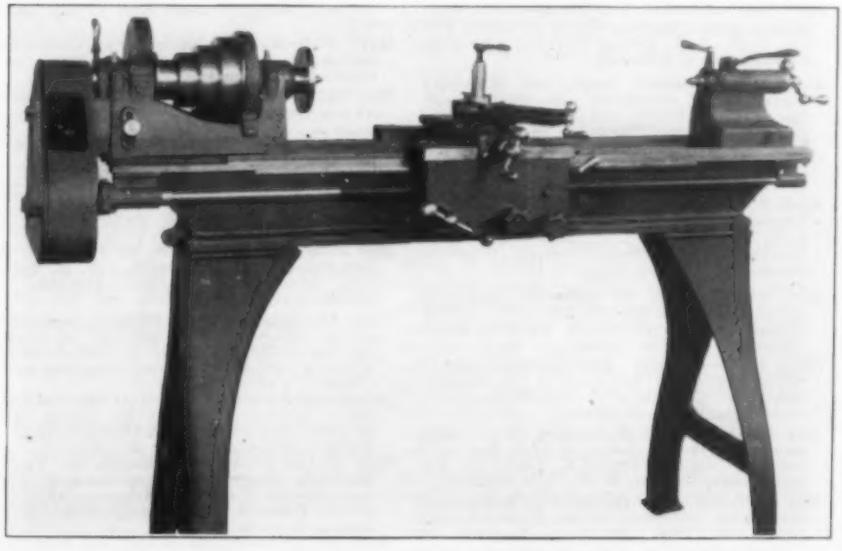
7. Having listed the expenses it is desired to relieve, the ratio of the measure of idleness is applied to these expenses and the resulting figure may be accepted as the expense of idleness.

8. The matter of disposing of this expense is a question for the management to decide. The writers have endeavored to discuss some of the considerations in connection with this side of the case and have offered suggestions which may assist in reaching this decision.

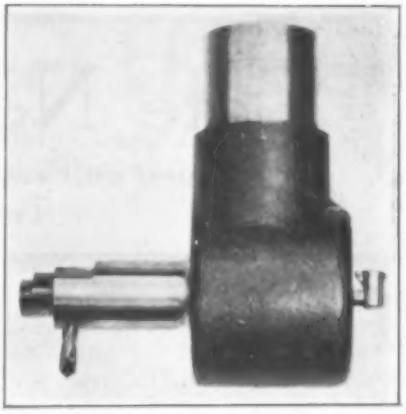
Builds New Lathe for Electrical Work

A general purpose screw cutting engine lathe designed particularly for the radio industry and magneto and starter work, has been announced by the Seneca Falls Mfg. Co., Inc., Seneca Falls, N. Y. One of these machines is shown in the accompanying illustration. It is built in sizes ranging from 9 to 13 inches swing and of the usual bed lengths, the one shown having a swing of 11 inches and a bed length of 5 feet. Either a motor or a belt may be used to drive the lathe which will accommodate a number of attachments. Construction is of the heavy ribbbed type with either bench or floor legs. Included in the features of the lathe are back gears, power longitudinal and cross feeds, a large hollow spindle adapted to draw-in chucks, a graduated cross feed screw, a set-over tail stock, a plain or compound rest, a double friction countershaft with a cone belt shifter and self oiling bearings.

This company has also developed a plain turning lathe with a 10⅛-inch swing and a 3-foot bed taking 12 inches between centers. It is equipped with a plain rest and feeds from 0.002 to 0.040 inch per revolution of the spindle, a set-over tailstock, an open belt, a 3-step cone and a self oiling spindle. The countershaft is of the tight and loose pulley type with roller bearings in the pulley. This machine was brought out to meet the demand for a small sturdy plain turning lathe without screw cutting features and is particularly adaptable for making small parts for electrical apparatus.



SMALL ENGINE LATHE EQUIPPED FOR CUTTING SCREW THREADS



SMALL OFFSET ATTACHMENT FOR DRILLING AND MILLING

Offset Attachment Gives Wide Drilling Range

For drilling, milling, countersinking, and counterboring port holes and grooves in air tools, such as rock drills, pneumatic hammers, drills and riveters, the Harris Engineering Co., Bridgeport, Conn., recently has developed a minimum space offset drilling attachment. It is made to reach into the main bore and drill or mill the vents or ports from the inside. By the use of these attachment, one of which is shown in the accompanying illustration, it is possible to drill to a specified depth, to counterbore or to mill circular, transverse or longitudinal slots. A wide range of drills and milling cutters can be used with the device.

Drive from the machine to the attachment is obtained through a spindle which has a taper shank fitted to the machine spindle. The lower end is squared to drive the attachment. Between the taper and the squared portion the spindle is necked down in diameter, a point in design which gives increased elasticity and provides a point of failure to prevent jamming of drills, mills or fixtures. As the lower half of the spindle is of cold rolled steel and is sweated into the taper shank with solder, it is replaced easily. Further applications claimed for the new attachment are inside drilling and milling, such as oil grooves, straight or spiral holes for holding babbit in bearing boxes, end milling and cutting blind keyways to retain a feather or key in a hub sliding on a shaft.

Late News of the Societies

Notes on Past and Coming Meetings of National and Local Trade and Technical Organizations

INTEREST in the sixth annual meeting of the American Gear Manufacturers' association which will be held April 20 to 22 at the Lafayette hotel, Buffalo perhaps will be centered in the report of committees which have been co-operating with the American Engineering Standards committee. Reports of other committeees on standardization also promise to be of unusual interest. Special emphasis will be given to business conditions in the gear industry and the outlook for the immediate future. Among the subjects to be discussed are "Good Hob Practice" by H. E. Harris, H. E. Harris Engineering Co. Bridgeport, Conn.; "The Use of the Projector Comparator in Testing Gear Teeth," by Rhalph E. Flanders, Jones & Lamson Machine Co.; Sprinfield, Vt. "Proportions of Industrial Gears," by G. E. Katzenmeyer, R. D. Nuttall Co. Pittsburgh. "The Grinding of Gear Teeth and Its Future in the Industry," by R. S. Drummond, Gear Grinding Machine Co., Detroit; "The Gleason Works System of Bevel Gears" by F. E. McMullen and T. M. Durkan, Gleason Works, Buffalo, N. Y., and "Conditions in the Industry" discussed from the the standpoint of member companies under the leadership of George L. Markland Jr., Philadelphia Gear Works, Philadelphia and from the automotive standpoint with R. P. Johnson, Warner Gear Co. An informal banquet for representatives and guests will beheld Friday evening, April 21, the principal speaker at which will be John C. Bradley of the Pratt & Letchworth Co., Buffalo.

* * *

French Foundrymen Plan Meeting

The Association Technique de Fonderie de France, which represents the French foundry industry, will hold its annual meeting this year in Nancy at a date to be fixed in the first half of October. A number of papers on French foundry practice will be read and discussed. Visits are being arranged to leading foundries in the Lorraine district.

* * *

Welding Society Plans Announced

Features of the program of the annual convention of the American Welding society which will be held in the Engineering societies building, New York, April 26 to 29 include meetings devoted to a study of problems in the welding industry, business and technical sessions and entertainment. The complete tentative program follows:

Wednesday, April 26

10:00 a. m.—Session on pressure vessel welding.

3:00 p. m.—Session on welding wire specifications. Meeting of resistance welding committee.

7:00 p. m.—Entertainment.

Thursday, April 27

10:00 a. m.—Business session.

2:00 p. m.—Board of directors. Committee meeting on the subject of specifications for steel to be welded.

8:00 p. m.—Technical session. Addresses: "Welding of Heavy Copper Plate" by A. S. Kinsey; "Electric Welding of Dredge Pipes," by J. H. Nead and R. L. Kenyon; "Thermit Welding," by J. H. Deppeler.

Friday, April 28

10:00 a. m.—Electric arc welding committee, gas welding committee.

2:00 p. m.—American bureau of welding.

Saturday, April 29

10:00 a. m.—Committees on training of operators and welding of storage tanks.

* * *

Metal Trades Completing Program

Details of the program of the 24th annual convention of the National Metal Trades association at the Astor, hotel New York, April 19-20, have been completed. Speakers include James A. Emery, A. M. Loomis, E. L. Greever, Harold G. Moulton, Harold C. Smith, L. F. Loree and Magnus W. Alexander. The program follows:

Wednesday, April 19

Morning session, business meeting.

Address, "The Industrial Emancipation of San Francisco," by Robert M. Lynch, president, San Francisco chamber of commerce, San Francisco.

Afternoon session, addresses: "American Industry and the Stabilization of Europe," by Harold G. Moulton, University of Chicago, Chicago; "Industrial Courts," by James A. Emery, National Association of Manufacturers, Washington; "The Farmer as a Balance Wheel," by A. M. Loomis, National Grange, Washington; "Facts and Fancies About Wages in Basic American Industries," by Magnus W. Alexander, National Industrial Conference board, New York.

Evening, banquet.

Thursday, April 20

Morning session, addresses: "West Virginia Fights for Freedom," by E. L. Greever, Greever, Gillespie & Divine, Tazewell, Va.; L. F. Loree, president, Delaware & Hudson railroad, subject not announced.

Report of committee on industrial education.

Presentation of manual of apprenticeship training.

Election of officers.

Convention Calendar

April 17-20—National Metal Trades association, annual convention at the Astor hotel, New York. Louis D. Fischer, Peoples Gas building, Chicago, is secretary.

April 20-22—American Gear Manufacturers association, annual meeting, Hotel Lafayette, Buffalo, N. Y. F. D. Hamlin, 4707 Stenton avenue, Philadelphia, is secretary.

April 24-26—American Supply and Machinery Manufacturers' association joint meeting with the Southern Supply and Machinery Dealers' association at the Tutweiler hotel, Birmingham, Ala. F. D. Mitchell, 4106 Woolworth building, New York, is secretary of the first mentioned society.

April 25-26—National Machine Tool Builders association, spring convention at the Traymore hotel, Atlantic City. Ernest F. Dubrul, Provident Bank building, Cincinnati, is general manager.

April 26-28—Society of Industrial Engineers spring meeting at the Statler hotel, Detroit. George C. Dent, 327 South La Salle street, Chicago, is business manager.

April 27-29—American Electrochemical society spring meeting in Baltimore at the Emerson hotel. Dr. Colin G. Fink, Lehigh university, Bethlehem, Pa., is secretary.

May 4-5—Iron and Steel institute, annual spring meeting at the Institution of Civil Engineer's building, London. George C. Lloyd, 28 Victoria street, London, S. W. 1, is secretary.

May 8-10—National Association of Manufacturers, annual convention at the Waldorf-Astoria hotel, New York. George S. Boudinot, 30 Church street, New York, is secretary.

May 8-11—American Society of Mechanical Engineers, spring meeting at Atlanta, Ga. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

May 10-13—National Foreign Trade council, ninth national convention, Philadelphia. O. K. Davis, 1 Hanover Square, New York, is secretary.

May 15-19—National Sheet Metal Contractors association, convention and exposition, Cadle tabernacle, Indianapolis.

May 15-20—National Association of Purchasing Agents, seventh annual convention, also exposition at Exposition park, Rochester, N. Y. H. R. Heydon, 19 Park place, New York, is secretary.

May 23-25—American Iron, Steel and Heavy Hardware association annual meeting, Hotel Washington, Washington. A. H. Chamberlain, Marbridge building, New York, is secretary.

May 25-26—American Society for Steel Treating, sectional meeting, Pittsburgh. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

June 5-9—American Foundrymen's association annual convention and exhibition at Exposition park, Rochester, N. Y. C. E. Hoyt, Marquette building, 140 South Dearborn street, Chicago, is secretary.

June 19-22—American Institute of Chemical Engineers, summer meeting at the Clifton hotel, Niagara Falls, N. Y. J. C. Olsen, Polytechnic institute, Brooklyn, N. Y., is secretary.

June 26-July 1—American Society for Testing Materials, twenty-fifth annual meeting, Chalfonte-Haddon Hall hotel, Atlantic City, N. J. C. L. Warwick, 1315 Spruce street, Philadelphia, is secretary.

Sept. 11-15—Association of Iron and Steel Electrical Engineers, 1922 convention at the new auditorium, Cleveland. John F. Kelly, Empire building, Pittsburgh, is secretary.

Trade Associations Meet Hoover

Representatives Confer with Secretary of Commerce on Voluntary Co-operation in Collecting and Publishing Business Statistics—May Consider Bill in Congress Proposing Control of Associations by Government

WASHINGTON, April 11.—Representatives of trade associations which are national or interstate in scope are to meet here tomorrow with Secretary of Commerce Hoover for the following purposes:

Securing a list of trade associations which will furnish voluntarily to the department of commerce and justice statistical information outlined in the February correspondence between the departments of commerce and justice.

Discussing and considering means and methods that best may be adapted for collecting and forwarding to the secretary of commerce, for dissemination, the classes of statistical information outlined in the correspondence, including the forms that will be most suitable, for associations willing to furnish such statistical information.

Discussion of the manner in which such reports of the statistical officer of the associations are to be filed with the department of commerce, and the manner and method of distributing the information to the members of the associations and to the public.

While primarily the conference will consider the relations of the associations with the department of commerce, the discussion necessarily will involve substantially all of the activities of the associations, and a thorough airing of the trade association matter is in prospect. In this connection it seems probable that the identical bills just introduced by Senator Walter E. Edge, of New Jersey, and Representative C. N. McArthur, of Oregon, both republicans, will come up.

The McArthur and Edge bills provide that every trade association, unless excused by the federal trade commission, shall file with the commission "a statement of its general character and proposed activities, a complete list of the names and addresses of its members, officers, directors, committees, or other managing agents, together with a true copy, or if oral, a true and complete memorandum of its articles of association, of its by-laws, of the minutes of all meetings, and of all resolutions and of all agreements of any nature whatsoever, express or implied, whether between members of the association as such, or between the association or its members as such and others, and all changes, modifications or cancellations thereof."

Every trade association likewise shall file with the commission "all statistics collected by said association, or for the benefit of said association, or its members as such, as to production, shipments, stocks on hand, contracts, prices, credit information, and all other statistics of any nature whatsoever respecting the trade and on request of the commission the members of any such association shall furnish to the commission such additional statistical information with respect to their own business as the commission may require". Whether such information is made public in whole or in part is left to the discretion of the commission. The commission also is to be notified of every meeting of associations even to committee meetings, and may be represented.

Any trade association may request from the commission "a specific ruling with respect of the legality of its plan of organization as expressed in its constitution or articles of association, and by-laws and any agreements or contracts between the association and its members, which constitute the working basis of the association." Then, if in the commission's opinion "the plan of organization and of operation and the agreement between the association and its members, in the light of the purposes and objects of the association as disclosed by the application, is not violative of the antitrust laws, the commission shall approve the plan of organization and the agreements between the association and its members and the purposes of such association and it shall issue its certificate to that effect."

Such certificate shall be "prima facie evidence of the legality of the existence of such association and of the purpose and objects thereof. If the commission shall be of opinion that the application discloses features which are in conflict with the antitrust laws, it shall suggest to the applicant wherein such conflict lies and what changes in the proposed plan of organization or of operation or other details will conform to the requirements of the antitrust laws. The issue of such certificate shall not be a legal pre-requisite to the organization or operation of any trade association, but no trade association shall be entitled to the privileges and immunities hereinafter set forth unless it shall have received such a certificate."

Armed with such a certificate, any trade association may request from the commission "a specific ruling with respect to any rules, methods, systems, or plans adopted or proposed to be adopted by the association for uniform use by its members in regard to cost accounting or for the preparation, collection, compilation and distribution of trade statistics, the establishment of proper trade definitions, trade names or brands, the establishment of just and proper trade practices and other similar matters in which the association believes uniform action by its members and others, if any, in the same line of industry is in the best interests of the industry." The commission may then call a trade practice submittal, assemble all in a given industry, and take up the practices in question. "The agreement of a majority interest, measured by the volume of business in any line of industry as expressed at such a conference and approved by the commission * * * shall constitute the merchant law of that line of industry and any deviation therefrom shall constitute unfair methods of competition," the bills state.

In effect, the bills provide for interpretive administration by the trade commission and would largely permit industries themselves to set up their own code of practices.

At the coming convention of the National Association of Manufacturers in New York one day, May 10, will be given over wholly to the trade association matter. Secretary of Commerce Hoover will deliver an address. Discussions will center around such topics as the public educational value of the trade associations, the value of associations to administrative agencies of the government, the relation of trade associations to state and federal legislative bodies, and the value of associations to management and employes.

On Thursday of this week trade association representatives will confer with representatives of the departments of commerce and labor, the Federated American Engineering Societies, the United States chamber of commerce, the bureau of railway economics, the Russel Sage Foundation and the Harvard committee on economic research on business cycles. The national unemployment conference has a special committee, of which Owen D. Young, of the General Electric Co., is chairman, studying cycles.

See Brighter Outlook For Hadfield's U. S. Plant

London, March 28.—In the annual report for the calendar year 1921 of Hadfield's Ltd., Sheffield and London, of which Sir Robert Hadfield is chairman, it is stated that the acute business situation in the United States last year regarded the development of the company's American subsidiary, the Hadfield-Penfield Steel Co., Bucyrus, Ohio, and that the parent company in England was obliged to extend financial assistance to the American concern. The report adds, "There are now signs of an improved demand for the American company's products and that the expectations which were formed by the directors in developing this new field will mature."

The parent English company, Hadfield's Ltd., which is one of the largest markers of special steel in the world, report larger profits for 1921 than in 1920. Profits in 1921 are reported at £158,157 ($696,000) compared with £107,856 ($475,000) in 1920. The usual dividend of 5 per cent, tax free, was declared. This is equivalent to 15 per cent on the former capitalization, a large stock dividend having been declared in 1918.

The report states that the company has invested £25,000 in the Vulcan Foundry, Newton-le-Willows, Lancashire. The new steel foundry at the Sheffield works, which forms an important part of the adaptation of war extensions to peace purposes, is now completed, and has for some months been working successfully. It will undoubtedly provide a profitable addition to the company's resources when the general conditions of trade improve. The two smaller rolling mills are also now working successfully, and the large cogging and billet mill is approaching completion.

The balance sheet shows the following items:

	1920	1921
Profit	£107,856	£158,157
Brought forward	133,610	135,728
Total	241,466	295,885
Carried forward	135,728	122,657
Ordinary dividend, per cent	5	5

Canadian Company Elects

Hamilton, Ont., April 10.—At the annual meeting of the Canadian Westinghouse, Co., Hamilton, Ont. the profits and loss accounts showed earnings for the year of $1,501,379. The dividends amounted to $741,790 leaving a balance of $349,589 carried forward to profit and loss, which account showed a surplus of $2,464,418 exclusive of all reserves. The following board was re-elected: Chairman, H. H. Westinghouse; president, Paul J. Myler; Vice-presidents, L. A. Osborne, F. A. Merrick, E. S. Braden; general manager, H. U. Hart; secretary, W. E. Sprague; treasurer, G. R. Kerr. Directors, Sir John Gibson, John F. Miller, W. Y. Soper, C. A. Terry and G. E. Tripp.

Reports First Loss

The Spicer Mfg. Co., South Plainfield, N. J., manufacturer of axles, universal joints and pressed steel parts for automobiles, reports a net loss for 1921 of $435,257, the first since the formation of the company in 1904. Operating profit, after expenses and depreciation, amounted to $12,674. The balance sheet shows net current assets of $5,589,824 and current liabilities of $1,881,368. The current assets consist of $4,067,128 inventories, $1,136,842 accounts receivable, $80,936 investment and $304,918 cash. Notes payable amount to $1,321,000.

Company in Bankruptcy

A petition in bankruptcy has been filed against the Century Steel Co. of America, Poughkeepsie, N. Y. by the following creditors: Charles B. Laister, $1,500; William H. Alexander, $98; International High Speed Steel Co., $90. Arthur P. Stone, Bartholmew A. Brickley and Cornelius W. Carrison were appointed receivers under bond of $10,000 each. It was stated that several judgements had been obtained against the corporation by creditors and that there was danger the assets would be impaired by execution. Assets at book value are figured at $375,000.

Receiver Is Named

A petition in bankruptcy was filed April 1 against the Vitreous Enameling & Stamping Co., Inc., New York, and Henry Brady was appointed receiver under $10,000 bond. It is stated the liabilities are more than $100,000, and assets about $50,000. A suit was filed against the corporation recently by the Greater New York Supply Co. to recover $150,000 for alleged breach of contract.

Industrial Building Gains

Plans have been submitted for the construction of a great many industrial buildings, according to Henry D. Sayer, industrial commission of New York state. This year's plans call for expenditures of $4,022,618 as against $2,191,446 for 1922. Of the total, $3,736,000 is for new buildings. Mr. Sayer says the figures do not include greater New York and it is unlikely that they include all of the factory buildings outside of New York City, as the law does not make it mandatory that builders submit their plans.

Far Eastern Trade Needs Better Methods

Better methods and better facilities, are the key to larger trade with Asia, according to F. R. Eldridge, chief of the Far Eastern division of the department of commerce, in an address at the University club, Washington, April 10. In countries where 80 per cent of the population live directly on the soil, accumulation of national wealth is greatly affected by crude methods, he said.

"It is in the improvement of these methods that American genius can be most profitably employed," Mr. Eldrige said. "The East has never been far enough ahead of starvation to take the time to develop better methods and without better methods, larger production with exportable surpluses is impossible. As long as the difficulties in the path of American trade with the Orient are those of method and facility, and do not involve a lack of resources and labor, they challenge rather than defeat American genius.

Steel and Tube Gains

The steel business of the Steel & Tube Co. of America has shown a steady gain since the first of the year. At the present time all steel mills are running at about 75 per cent of capacity with orders now on the company's books to maintain this operation for the next six months at least. Sales of pig iron in the month of March were the largest of any month since September, 1920. Another blast furnace will soon be put in operation.

Statement Is Corrected

Through an unfortunate transposition of the first two lines of two items appearing on page 843 in the Here and There section of the March 23 issue of THE IRON TRADE REVIEW, it was made to appear the Spencer Turbine Co., Hartford, Conn., had been dissolved. This was an error. The first two lines of one item should have referred to Braman, Dow & Co., Boston, distributors of iron and steel products, who were made to appear as having elected officers. Braman, Dow & Co. have been dissolved and the item should have so stated while the other should have referred to the election of officers by the Spencer Turbine Co. The officers of the Spencer Turbine Co., are: President, Ira H. Spencer; secretary, S. E. Phillips; treasurer, H. H. Richardson; and directors, Ira H. Spencer, Arthur P. Day, J. M. Lord, Clive Day, William L. Ledger and H. D. Spencer.

Furnaces Opposed on Rail Rates

Eastern Pennsylvania Claims Changes since 1917 Have Been To Its Disadvantage and Favorable to Buffalo—Reparations On Steel from Pittsburgh to Cleveland District Recommended Because Through Rates Exceed Sum of Intermediate Rates

WASHINGTON, April 11.—Eastern Pennsylvania blast furnaces which are asking permission of the interstate commerce commission to intervene in the Buffalo ore and fuel case are charging that changes which have been made in freight rates on furnace materials since 1917 "not only have not diminished the natural advantages of Buffalo and vicinity as producing points for pig iron and iron and steel products but also have greatly increased such natural advantages to the corresponding prejudice and disadvantage of your petitioners".

This action was taken by the Alan Wood Iron & Steel Co., Colonial Steel Co., Delaware River Steel Co., E. & G. Brooke Iron Co., Empire Steel & Iron Co., Eastern Steel Co., Robesonia Iron Co., Ltd., Reading Iron Co. and Thomas Iron Co. It focuses the attention of a major part of the industry on the hearing which begins in Washington on April 24. At that time Examiner Jewell will inaugurate the proceedings growing out of the suspension of the ore tariffs contemplating reductions on ex-lake and all rail ore in eastern territory and the petition of the Buffalo furnace interests for reduced coal and coke rates and establishment of minimum ex-lake ore rates.

Pending the opening of the hearing on substantially all of the iron ore rates in eastern territory, the commerce commission is considering the recommendation of the examiner in the complaint of the American Shipbuilding Co. against the Baltimore & Ohio railroad, involving the through rates on iron and steel articles in carloads from points in the Pittsburgh district to Cleveland, Lorain and Canton, O. The examiner urges the commission to find the rates unreasonable to the extent they exceed the aggregate of the intermediate rates. Thus, the through rate from Pittsburgh to Cleveland now is 24 cents per 100 pounds, to Lorain 25.5 cents and to Canton 22 cents, while the aggregate of the intermediate rates to these three points is only 21 cents. The carriers admit that the through rates violate the long and short haul clause of the commerce act but contend that a change will disrupt the long established relationship. The examiner urges that reparation be awarded the shipbuilding company from Sept. 20, 1917, to date, and to the Standard Parts Co., of Cleveland, an interventor, from March 1, 1920.

A somewhat similar situation is revealed by the tentative report of the examiner in the complaint of the Firestone Tire & Rubber Co. Akron, O., against the Pennsylvania railroad. The rate on channels between Pittsburgh and Akron is held to be unreasonable to the extent it exceeds the sum of the intermediate rates. The complaint centers on shipments of 61 carloads of channels. In the case of the Northwest Steel Co., Portland, Oreg., against the Burlington railroad the final decision of the commission is that rates on rough steel shafting from Camden, N. J., Buffalo, Titusville and Nicetown, Pa., and Gary, Ind., to Portland and Tacoma, Wash., for export, between July, 1918, and September, 1919, were unreasonable.

Reviving business is reflectd in the increased car loadings of the railroads. The total loading in the week ended March 25 was 846,035 cars, compared with 823,369 in the preceding week and 686,567 in the corresponding week of 1921. The week of March 25 was the heaviest for the carriers since the last week of last October. The loading of 8676 cars of coke was the greatest since the week of Feb. 19, 1921.

Proponents of the Great Lakes-St. Lawrence canal project are quoting E. G. Grace, president of the Bethlehem Steel Co., as saying: "The question of building ore-carrying ships for ocean service presents no difficult problems, as our experience has taught us in the fleet we are operating between Cuba and the United States. It would seem that the transportation of ore from the upper lakes to the seaboard ports in vessels should be considerably cheaper than the part-vessel and part-railroad method, now necessary."

Coke Oven By-Products

Spot	
Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.27 to $0.29
Toluol	.28 to .30
Solvent naphtha	.25
Per Pound at Producers' Plants	
Phenol	$0.15
Naphthalene, flake	.07 to .08
Naphthalene, balls	.08 to .09
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.60 to $2.65
(Prices on spot sulphate also quotable on business for delivery over next several months.)	
Contract	
Pure benzol	$0.27 to $0.29
Toluol	.28 to .30
Solvent naphtha	.25
Per Pound at Producers' Plants	
Phenol	nominal
Naphthalene, flake	$0.07 to $0.08
Naphthalene, balls	.08 to .09
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia (12 months)	nominal

Domestic Needs

Receive Undivided Attention of Benzol Producers—Other Products Moving

New York, April 11.—Substantial demand for benzol continues and sellers in an effort to meet all domestic requirements, are now paying little or no attention to foreign inquiry. Those interests, however, are looking for some relief in the near future from increased operations at the steel mills, despite the fact that the coal strike is threatening interference in some quarters.

Prices still are unchanged, pure benzol holding at 27 to 29 cents, f.o.b. works in tanks and 32 to 35 cents in drums, while 90 per cent benzol is holding at 25 to 27 cents, f.o.b. works in tanks and 30 to 32 cents in drums. Toluol is quoted at 28 to 30 cents, f.o.b. works in tanks and 33 to 35 cents in drums, with solvent naphtha at 25 cents in tanks, f.o.b. works and 28 to 30 cents in drums.

Sulphate of ammonia is steadier in price, being quoted at $2.65 to $2.70, f.o.b. works, on business for domestic account and $3.15 to $3.25 eastern seaboard, on business for export. Demand at present is comprised of small lots, virtually all for nearby shipment.

The drug trade, while having closed on the bulk of their requirements for the spring cleaning season some time ago, are buying small lots to round out their needs. As a result, the market is taking on a fairly active aspect. Prices continue unchanged at 7 to 8 cents; f.o.b. works on flakes and 8 to 9 cents on balls. Phenol is being offered by the government at 12 cents, f.o.b. warehouse, and by the producers on the fresh made material, at 15 cents, f.o.b. works.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

BALTZAR DE MARE, metallurgist and more recently steel superintndent for the Midvale Steel & Ordnance Co. for approximately 20 years, now has been appointed general manager of the Union Electric Steel Co., Carnegie, Pa.

Ernest McKay, works superintendant of the Nova Scotia Steel & Coal Co., has resigned to go to Pittsburgh where he will engage in the steel industry.

C. L. Backus has been elected a director of the Studebaker Corp., automobile manufacturer, succeeding the late A. Barton Hepburn.

William H. Woodin, president of the American Car & Foundry Co., sailed April 5 for Havre. He will attend the international railway congress in Rome.

John Kearns, Carl M. Beattie and George W. Kinsey have been elected directors of the Empire Tube & Steel Corp., College Point, N. Y.

S. W. Tarr, superintendant of construction in the mechanical division of the Oliver Iron Mining Co., has been made chief engineer of the company, succeeding the late Alexander M. Gow.

William E. Dougherty has been appointed to the sales force of the Philadelphia office of the Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago.

Harold Wyman, for several years production manager of the Rowe Calk & Chain Co., Plantsville, Conn., has succeeded Warren D. Chase as manager.

Douglas P. Cook, president and general manager of the Boston Pressed Metal Co., Worcester, Mass., has been elected a director of the Massachusetts state chamber of commerce.

Orville P. Palmer, purchasing agent of the Pratt & Whitney Co., Hartford, Conn., machine tool builders, has been elected national director of the Purchasing Agents association.

William Ferguson has sailed for Europe to inspect and set up machinery in France, Spain and Italy for the Whitin Machine Works, Whitinsville, Mass.

William Ochase, formerly sales representative of Manning, Maxell & Moore, Inc., at Chicago, has been made efficiency engineer of the Ohio Machine Tool Co., Kenton, O.

J. R. Dangler, formerly assistant to the president of the Central Steel Co., Massillon, O., has been made secretary and treasurer of the Vacuumeter Mfg. Corp., 416 Bulkley building, Cleveland.

Wiley H. Marble, formerly manager of the American Stainless Steel Co., Pittsburgh, now is affiliated with the Palmer Engineering Co., 335 Fifth avenue, that city. This company designs stokers etc.

BALTZAR DE MARE

Carmi A. Thompson, vice president of the Tod-Stambaugh Co., Cleveland, ore operator, has announced his candidacy for the republican nomination for governor of Ohio.

Victor H. Todd, for several years associated with the Federal Tool & Alloy Steel Corp., 66 Rutledge street, Brooklyn, has been appointed general manager succeeding Thomas Towne, resigned.

Ray French has been appointed superintendent of the sewing machine needle department of the Excelsior plant of the Torrington Co., Torrington, Conn., to succeed Joseph Newbury Scoville, who died March 28.

Thomas W. Gerwig, chief clerk in the Cleveland sales offices of the Republic Iron & Steel Co., Youngstown, has resigned to join the bond sales staff of Halsey W. Stewart & Co., Chicago.

Morris Ferer, formerly general manager for Abe Feinberg, Muncie, Ind., has again associated himself with Aaron Ferer & Sons, Omaha, jobber in bar iron, metals and scrap, and will have charge of the Omaha plant.

G. R. Sherratt has been appointed manager of the Chain Belt Co.'s office in the Union Arcade building, Pittsburgh. He will have charge of the company's chain and engineering business in the Pittsburgh territory.

Spencer G. Gilbert, of Henry Gilbert's Sons, Harrisburg, Pa., wholesale hardware merchants, has been elected a director of the Pennsylvania railroad, succeeding the late Joseph Wood.

William S. Trask, mechanical superintendent for the past few years of the Russell & Erwin division of the American Hardware Corp., New Britain, Conn., has resigned to enter the automobile business in that city.

Arthur Mackay formerly in charge of the Montreal branch of the Coates, Bennett & Reidenbach Co., Rochester, N. Y., has been made assistant manager of the scrap department of the Buffalo House Wrecking & Salvage Co., Buffalo, under Dan Roblin.

George W. Ball of McClure & Ball, Worcester, Mass., has been elected president of the New England Federation of Sheet Metal Contractors. W. F. Davis, of Boston, was elected president of its newly organized salesman's auxiliary.

Fred Heiser has been made foundry superintendent of the malleable department of the Superior Steel Casting Co., Benton Harbor, Mich. Mr. Heiser formerly had charge of the malleable foundry of the Timken Detroit Axle Co., Canton, O.

George H. Southard, treasurer of the J. & B. Mfg. Co., Pittsfield, Mass., has been elected president to succeed Edward B. Jacobson, resigned, and will hold both positions. Raymond D. Tufts succeeds Mr. Southard as clerk of the company.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

ROBERT GREGG, secretary and treasurer of the Atlantic Steel Co., Atlanta, has been elected president of the company succeeding Thomas K. Glenn who has been made chairman of the board of directors. Mr. Gregg is one of the country's youngest steel presidents, being only 37 years old. He was born in Atlanta April 14, 1885; was educated in the public and preparatory schools there and was graduated from Georgia School of Technology as a bachelor of science in 1905 and next year completed a post graduate course at Cornell with the degree of mechanical engineer. In August that year he entered the employ of the Atlantic Steel Co. as a clerk in the general superintendent's office. A year later he was transferred to the open-hearth department, serving as a helper on furnaces. Then he was made a cost accountant and in 1909 was placed in charge of the accounting department and in 1912 was made secretary of the company in which he also is a director. Later he was made treasurer. Besides membership in several local organizations, Mr. Gregg is a member of the American Iron and Steel institute.

Barton Stevenson, manager of the power and railway divisions of the Pittsburgh office of the Westinghouse Electric & Mfg. Co., continues as manager of the power division, which has been separated from the other, and F. G. Hickling has been made manager of the railway division.

C. J. Houck has been made foundry superintendent for the Hess-Snyder Co., Massillon, O. Mr. Houck formerly was connected with the malleable plant of the Timken-Detroit Axle Co., Canton, O., and previous to that time was with the Vulcan Iron Works, Denver, Col.

Charles A. Booth, vice president and sales manager of the Buffalo Forge Co., Buffalo; William P. Dallett, president and general manager of the William P. Dallett Co., Philadelphia, builder of pumping machinery, Frederick M. Feiker, vice president and chairman of the editorial board of the McGraw-Hill Co., Inc., New York. H. Homer Tracy, president of the Tracy Engineering Co,. San Francisco, and Francis W. Treadway, Cleveland, have been nominated by the alumni for trustees of the Worcester Polytechnic institute, Worcester, Mass.

Leighton H. Peebles, formerly general manager of Frazar & Co., 30 Church street, New York, exporters and importers, has been admitted to the partnership which now includes Everett W. Frazar, Richard F. Warner, Glowacki R. Parker, and Mr. Peebles.

ROBERT GREGG

L. D. Mowery, founder of the Metal Craft Co., Cleveland, and until recently connected with the E. F. Hauserman Co., Cleveland, steel partitions, lockers, etc., has joined the Mills Co., 5320 St. Clair avenue, Cleveland, manufacturer of metal products. Mr. Mowery will be general manager in charge of all production.

Oliver Stubbs, president of the Institution of British Foundrymen, and Thomas H. Firth, past president of the institution, are on their way to the United States in the interest of promoting closer relationship between the technical organizations representing the castings industries of the United States and Europe.

R. A. Bull, research director of the Electric Steel Founders' Research Group, Chicago, has been elected a member of the Institution of British Foundrymen. On account of Major Bull's services to the foundry industry, the council of the institution took the unusual step of unanimously passing a resolution expressing their gratification in being enabled to number the American foundryman among its members.

H. C. Kensing, formerly manager of the steel tubing department of the U. T. Hungerford Brass & Copper Co., in its New York branch, has been made district sales manager of the Detroit Seamless Steel Tubes Co., Detroit, with headquarters in the Canadian Pacific building, 342 Madison avenue, New York.

Nelson J. Darling, assistant general manager of the Erie, Pa., works of the General Electric Co., has been elected manager of the River Works, Lynn, Mass., of the company, to succeed Richard H. Rice, who died recently. Frank P. Cox, who has been acting manager of the West Lynn, Mass., works has been promoted to manager.

W. B. Dean, for the past two years and a half assistant director of publicity for the American Rolling Mill Co., Middletown, O., has become associated in advertising work with the Armco Culvert and Flume Manufacturers association. Mr. Dean has been with the American Rolling Mill Co. since June 10, 1912, for six years in the operating department and later in the sales.

Col. Lloyd E. Jennings, manager of the Crescent Co., Meriden, Conn., maker of mechanics' tools, has taken over the sales agency of the American Saw & Mfg. Co., Springfield Mass., in Ohio, Illinois, Kentucky, Missouri, Tennessee, Indiana, Michigan and the western part of Pennsylvania, and will make his home in Findlay, O., about May 1. His brother, A. B. Jennings will succeed him at the Crescent Co.

T. A. Mitchell, chemical engineer, formerly with the Norsk Aluminum Co. of Norway, has joined the aluminum and bauxite department of Rogers, Brown & Co., 30 Church street, New York. Mr. Mitchell, who has had an extensive career in constructing chemical plants and developing chemical processes in Europe and this country, also continues consulting engineer to the Norsk Aluminum Co.

Prices Paid for Ore Determined

Average for Mesabi Nonbessemer in 1921, $5.48, or $2.13 More Than in 1916—Analyses of Chemical Constituents Basis of Comparison—Bulk of Lake Superior Product, as Shipped, Below Standards for Base Grades

AVERAGE prices paid for Lake Superior iron ores delivered at lower lake ports are running behind the quotations on the base grades. This is due to the fact, as average anaylses of yearly shipments show, that the ore contains less iron natural than does the theoretical standard base grade ores. Exceptions to this rule are noted where the comparisons are narrowed down to certain ranges. If only the bessemer and low phosphorus nonbessemer ores are considered the average prices are not far below the quotations on the base grades, but including the high phosphorus nonbessemer ore and certain other grades on which there are no fixed price standards, the prices actually realized on the tonnages sold are considerably below those indicated for the two base grades. Not all the Lake Superior operators have high phosphorus nonbessemer ore, but the tonnages are included in the total amount sold, and reduce prices and profits accordingly.

The average anaylses of the chemical constitutents of Lake Superior iron ore shipped in 1921 afford means for comparing prices paid for the ore with those quoted on the base grades. As quotations are likely to be reduced for 1922, the accompanying table presenting the average prices paid by consumers in recent years will be of interest to furnace companies.

The analyses of ore shipped in 1921 have just been determined by the Lake Superior Iron Ore association. From the analyses the prices realized may be figured in accordance with certain fixed formulas. Beginning with an article in the May 27, 1920 issue, giving the average anaylses for a period of 19 years, THE IRON TRADE REVIEW carried forward the figures for 1920 in the issue of April 14, 1921. The tables accompanying the present article carry the comparison one step further. The statistics as issued by the ore association do not include prices; the latter are worked out by THE IRON TRADE REVIEW.

In 1921 a certain amount of cutting was done in an effort by mine operators to move tonnages for which there was little demand. The bulk of the ore, sold by the leading independent producers, went at the prices quoted at the beginning of the season. The tonnage on which concessions were allowed was comparatively insignificant, and therefore, the average prices as shown by the anaylses are fairly representative.

At the opening of the season of 1921 there was announced a reduction of $1 from the base price of 1920, on all grades of ore. This brought the base price on old range bessemer ore to $6.45, delivered at lower lake ports. Analyses disclose that the average price paid for this grade of ore from the Gogebic range of 1921 was $1.30 less than the base price of 1920, $7.45. The ore shipped contained an average of 52.51 per cent iron natural, as compared with 55 per cent, the standard of the base grade. A comparison of this nature as sometimes made, however, does not go far enough. The average price received in 1920 was not $7.45 per ton, but $7.25. Therefore, the actual average reduction was $1.10 The ore shipped from the Gogebic range in 1921 was not quite up to the quality of 1920, resulting in a greater reduction than would have been the case had it been the same.

The bessemer ore shipped from the Marquette range in 1921 brought an average price, delivered at lower Lake port, of $6.45 per ton, as compared with $6.45, the base grade. The average analyses of the Marquette ore was 54.71 per cent, closer to the base grade of 55 per cent iron natural than the ore from any other range. It was exceeded in quality only by the bessemer ore from the Vermillion range, which averaged 58.30 per cent iron natural and brought $6.99.

The bessemer ore shipped from the Menominee range in 1921 brought an average of $6; that from the Cuyuna, $6.37, and that for the average ore of the old range, $6.43. The ore from the Mesabi brought $6.15, or 5 cents less than the base price, $6.20.

Prices received by the old range operators on low phosphorus nonbessemer ore in 1921 were higher than the base price in the majority of instances.

The base price was $5.70 for ore containing 51½ per cent iron natural. The average price paid for the low

Prices of Iron Ore, Based on Average Analyses

*BESSEMER

	Gogebic	Marquette	Menominee	Vermillion	Cuyuna	Average old range	Quoted on base ore	Mesabi	Quoted on base ore
1921.....	$6.15	$6.45	$6.00	$6.99	$6.37	$6.43	$6.45	$6.15	$6.20
1920.....	7.25	7.71	6.93	8.03	7.35	7.38	7.45	7.11	7.20
1919.....	6.29	6.78	5.96	6.99	6.36	6.43	6.45	6.05	6.20
1918 Oct. 1..	6.47	6.87	6.14	7.08	6.52	6.60	6.65	6.24	6.40
July 1..	6.24	6.62	5.91	6.81	6.27	6.35	6.40	5.99	6.15
April 1.	5.78	6.16	5.49	6.35	5.83	5.92	5.95	5.55	5.70
1917.....	5.82	5.75	5.59	6.42	5.88	5.90	5.95	5.50	5.70
1916.....	4.38	4.52	4.32	4.78	4.30	4.47	4.45	4.05	4.20

*Ores containing not more than 0.001 per cent of phosphorus, dried, to each unit of iron natural. Base grade, 55 per cent iron.

**LOW-PHOSPHORUS NONBESSEMER

	Gogebic	Marquette	Menominee	Vermillion	Cuyuna	Average old range	Quoted on base ore	Mesabi	Quoted on base ore
1921.....	$5.85	$5.86	$5.40	$6.94	$5.76	$5.83	$5.70	$5.48	$5.55
1920.....	6.92	6.85	6.60	8.12	6.86	6.86	6.70	6.43	6.55
1919.....	5.91	5.80	5.61	6.76	5.80	5.85	5.70	5.41	5.55
1918 Oct. 1..	6.08	6.00	5.86	6.86	5.32	6.05	5.90	5.59	5.75
July 1..	5.82	5.75	5.60	6.57	5.08	5.76	5.65	5.34	5.50
April 1.	5.38	5.30	5.16	6.05	4.68	5.31	5.20	4.91	5.05
1917.....	5.38	5.33	5.27	5.92	5.12	5.36	5.20	4.91	5.05
1916.....	3.84	3.78	3.82	4.31	3.70	3.83	3.70	3.35	3.55

**Ores of nonbessemer grade containing not more than 0.180 per cent of phosphorus. Base grade, 51½ per cent.

phosphorus ore from the Gogebic range was $5.85; Marquette, $5.86; Menominee, $5.40; Vermillion $6.94; Cuyuna, $5.76. The average of all was $5.83. The price paid for the Mesabi ore was $5.48 as compared with the base, $5.55.

The base price of ore is determined by a number of factors, principally cost of mining. The operator may obtain more than the base price by shipping a higher grade of ore, but in that case he is withholding the poorer grades which he has on hand, and which would have to be marketed subsequently probably at a greater loss than if he "fed" it along uniformly, keeping the general average up substantially to the base grade requirements. A sidelight on this is that of all the ore shipped from the Lake Superior district in 1921, 52.07 per cent was iron natural, as compared with 51.69 per cent for the total tonnage shipped in 1920 and 51.57 per cent for 1919. The average percentage of phosphorus decreased from 0.103 in 1920 to 0.087 in 1921; silica increased from 8.13 per cent to 8.23 per cent. Manganese fell from 0.77 per cent to 0.62 per cent.

The percentage of iron in the bessemer grade of ore shipped in 1921 was 54.36, as compared with 55 per cent, the theoretical base grade. The percentage of iron natural in the low phosphorus nonbessemer ore was 51.23, compared with 51½ per cent, base. Further comparisons follow:

	Iron (Natural)	Phos.	Silica	Mang.	Average Moisture
GOGEBIC					
1921	52.10	.061	9.20	.58	11.72
1920	52.75	.066	7.63	.77	11.93
1919	52.95	.063	7.74	.63	11.66
MARQUETTE					
1921	50.95	.138	11.87	.38	9.78
1920	51.70	.122	11.11	.36	9.69
1919	51.06	.148	11.87	.37	9.63
MENOMINEE					
1921	50.82	.347	8.15	.36	7.79
1920	50.20	.332	9.22	.57	7.62
1919	50.52	.375	8.23	.57	8.07
VERMILLION					
1921	58.60	.049	6.53	.12	5.84
1920	58.62	.057	6.79	.10	5.63
1919	58.60	.059	6.66	.12	5.85
CUYUNA					
1921	49.66	.175	8.90	1.59	11.45
1920	46.61	.211	9.05	3.29	11.39
1919	48.35	.292	8.60	1.99	11.54
TOTAL, OLD RANGE					
1921	52.28	.153	9.02	.51	9.58
1920	51.45	.169	8.87	.85	9.90
1919	51.73	.191	8.62	.70	9.96
MESABI					
1921	51.98	.061	7.92	.67	11.49
1920	51.84	.063	7.69	.73	11.81
1919	51.50	.066	7.75	.75	12.03
TOTAL, ALL RANGES					
1921	52.07	.087	8.23	.62	10.45
1920	51.69	.103	8.13	.77	11.09
1919	51.57	.108	8.04	.73	11.34

Average Analyses, Lake Superior Ore, 1921

TOTALS OF ALL GRADES

Range	Tons shipped	Iron (natural)	Phos.	Silica	Mang.	Average moisture	Per cent of total
Gogebic	2,313,846	52.10	0.061	9.20	0.58	11.72	...
Marquette	1,105,791	50.95	0.138	11.87	0.38	9.78	...
Menominee	1,570,289	50.82	0.347	8.15	0.36	7.79	...
Vermillion	860,632	58.60	0.049	6.53	0.12	5.84	...
Cuyuna	483,719	49.66	0.175	8.90	1.59	11.45	...
Total, Old Range	6,334,277	52.28	0.153	9.02	0.51	9.58	...
Mesabi	16,189,712	51.98	0.061	7.92	0.67	11.49	...
Total	22,523,989	52.07	0.087	8.23	0.62	10.45	...

BESSEMER ORES

Gogebic	1,189,770	52.51	0.043	10.05	0.32	10.70	51.4
Marquette	33,965	54.71	0.041	7.95	0.25	10.84	3.1
Menominee	111,058	51.24	0.042	6.37	0.26	6.85	7.1
Vermillion	783,017	58.30	0.039	6.42	0.12	6.32	91.0
Cuyuna	29,428	53.97	0.039	9.97	0.06	10.22	6.1
Total, Old Range	2,147,238	54.61	0.041	8.50	0.24	8.90	33.9
Mesabi	5,141,600	54.25	0.040	7.61	0.41	10.01	31.8
Total	7,288,838	54.36	0.040	7.87	0.36	9.69	32.4

LOW-PHOSPHORUS NONBESSEMER ORES

Gogebic	911,611	52.76	0.085	6.71	0.60	13.03	39.4
Marquette	689,721	52.79	0.094	8.79	0.34	10.06	62.4
Menominee	266,125	49.38	0.055	10.06	0.26	6.71	16.9
Vermillion	77,615	61.67	0.152	7.67	0.08	0.94	9.0
Cuyuna	218,473	52.02	0.110	9.80	0.27	11.75	45.1
Total, Old Range	2,163,545	52.60	0.089	8.13	0.42	10.74	34.2
Mesabi	10,945,171	50.96	0.072	7.99	0.79	12.19	67.6
Total	13,108,716	51.23	0.075	8.01	0.73	11.95	58.2

HIGH-PHOSPHORUS NONBESSEMER ORES

Marquette	199,409	51.22	0.379	6.53	0.69	12.35	18.0
Menominee	1,101,496	51.27	0.465	7.17	0.37	8.22	70.1
Cuyuna	179,854	49.61	0.242	8.65	0.62	10.68	37.2
Total	1,480,759	51.07	0.427	7.25	0.44	9.07	23.4

MANGANIFEROUS

Gogebic	141,259	49.31	0.080	7.95	2.81	13.50	6.1
Menominee	13,476	45.59	0.620	7.90	4.00	7.39	0.9
Cuyuna	55,964	38.36	0.285	5.59	10.64	13.37	11.6
Total, Old Range	210,699	47.16	0.169	7.32	4.97	13.07	3.3
Mesabi	20,027	49.00	0.064	10.40	2.00	12.50	0.1
Total	230,726	46.41	0.159	7.59	4.71	13.02	1.0

SILICIOUS

Gogebic	71,206	42.45	0.034	29.17	0.30	8.57	3.1
Marquette	182,996	43.01	0.059	30.04	0.25	5.75	16.5
Menominee	78,134	49.59	0.060	18.10	0.18	6.75	5.0
Total, Old Range	332,036	44.44	0.054	27.05	0.24	6.59	5.2
Mesabi	82,914	47.51	0.042	18.25	0.39	10.17	0.5
Total	414,950	45.50	0.052	25.29	0.27	7.31	1.8

Canadian Rail and Bridge Projects Planned

Railroad bridge and track extensions contemplated by the Canadian government this year, in addition to work already under construction, call for 3100 tons of structural steel, 25,000 tons of steel rails and the necessary tonnages of bolts, nuts, rivets, track fastenings, etc., to complete the projects, according to Vice Consul Giroux at Quebec.

The 1922 program calls for seven bridges. One is the Drummondville bridge of two spans, requiring 267 tons of steel. Another is the East Angus double deck bridge with steel approach viaduct, calling for 446 tons. The St. Stanislas bridge will have three spans, requiring 357 tons, while the Iles Perrot bridge will consist of two bridges joining the Perrot islands and requiring 1339 tons. The Shipshaw bridge over the Saguenay river near Kenogami will be of the cantilever type and will require 446 tons. The St. Alexis and St. Raymond bridges will require 178 tons and 111 tons respectively.

Extension of the Quebec-Chibougamou railroad through Lake St. John, from Chicoutimi to St. Felicien, about 120 miles, will be a first class road using 100-pound rails. This will mean a tonnage of approximately 18,850. The Interprovincial & James Bay railroad will build a colonization extension from Kipawa to Riviere-des-Quinze, 70 miles, using a 56-pound rail, calling for 6160 tons.

According to the chief engineer and director of railways in the province of Quebec, 58 steel bridges were built from July 1, 1920, to June 30, 1921. Fifty-five now are under construction of which 32 are all steel and 23 of reinforced concrete.

Building projects contemplated in Canada include the Hotel Chateau Frontenac, the Industrial Palace, and the Montcalm hotel, each to cost $1,000,000; a new union station, $700,000; a court house annex $600,000; legislative building annex and schools, each $500,000; and the Banque Nationale, $350,000.

Obituaries

KNOX TAYLOR, long a leading figure in the eastern steel industry, died April 4 at his home at High Bridge, N. J. He was president of the Taylor-Wharton Iron & Steel Co. and represented the fifth generation of his family to manage the industry which was founded in 1742. Mr. Taylor also was president of the Tioga Steel & Iron Co., Philadelphia,

KNOX TAYLOR

the Philadelphia Roll & Machine Co., Philadelphia, and Wm. Wharton Jr. & Co., Easton, Pa. He was born at High Bridge in 1873, the son of the late William Johnson Taylor and began his education at Chester, N. J., where for a time his father operated a blast furnace. Mr. Taylor attended the Hill school at Pottstown, Pa., the Model school at Trenton, N. J., and was graduated from Princeton university in 1895, as bachelor of science. He was selected as tackle on the all-American football team in 1895. For seven years after his graduation Mr. Taylor engaged in mining engineering in the West. In 1902 he entered the employ of the Taylor Iron & Steel Co. at High Bridge, starting at the bottom and working up through the various departments until in 1905 he became general manager. He was elected president of the Taylor Iron & Steel Co. in 1910 and it was his vision which led to the great expansion of the business in recent years. In 1912, the Taylor company purchased all the interests of Wm. Wharton Jr. & Co., and its subsidiary, the Philadelphia Rolling Machine Co. The High Bridge plant had been engaged in the production of manganese steel since 1892 under license of the Hadfield patents so that the acquisition of the Wharton company, which originally had applied manganese steel to track work was a natural development. The new combination was known as the Taylor-Wharton Iron & Steel Co. In 1913 Mr. Taylor decided to combine the two plants of the Wharton company at Philadelphia and Jenkintown, Pa., into one new modern plant at Easton, Pa. The Easton plant was placed in full operation in 1916. In 1913, Mr. Taylor acquired for his company the Tioga Iron & Steel Co. During the war, the latter company erected a new forge shop and other buildings and turned out gun forgings for the government. In addition, Mr. Taylor personally did a great deal of work in government service during the war. Mr. Taylor was a life trustee of Princeton university, vice president of the Railway Business association, member of the Engineers' club, American Society for Testing Materials, American Institute of Mining and Metallurgical engineers, American Chemical society, American Society of Mechanical Engineers, Society for Promotion of Engineering Education, Princeton Engineering association, the Iron and Steel institute, the American Iron and Steel institute, president of the High Bridge Printing Co., director of the First National bank of High Bridge and of the Delaware & Bound Brook railroad. He carried on many philanthropies and devoted much attention to community and welfare work. He organized the first boy scout troop in High Bridge.

Joseph Hasson Creighton, aged 37 years, treasurer, general manager and director of the Monongahela Iron & Steel Co., Pittsburgh, died recently after a brief illness with bronchial pneumonia. Mr. Creighton was a prominent figure in industrial circles in Pittsburgh and West Virginia during the past 10 years. He located in Pittsburgh about nine years ago and about four years ago become affiliated with the Monongahela Iron & Steel Co., as engineer. Early in 1920, however, he was elected treasurer.

Robert Skemp, aged 64 years, assistant to S. A. Davis, vice president of the American Sheet & Tin Plate Co., Pittsburgh, died suddenly April 8 in Scottdale, Pa. He was born in Bilston, South Staffordshire, England, and became experienced in the sheet business in England. He located in Scottdale in 1887, and was employed at the Scottdale works of W. H. Everson & Co., and was later made assistant superintendent of the plant. When the Scottdale works was taken over by the

ROBERT SKEMP

Scottdale Iron & Steel Co., Ltd., he was made general superintendent of the Scottdale and Old Meadow plants of the company, and at the time when they were absorbed by the American Sheet Steel Co. Mr. Skemp was president. When the American Sheet Steel Co. became the American Sheet & Tin Plate Co., Mr. Skemp was made its district manager in charge of Scottdale, Old Meadow, and Humbert plants. In 1910 he was made assistant to the vice president of the company, with offices in Pittsburgh. He had held that position since, with the exception of the time that he was a dollar-a-year man for the government during the world war, being chief of procurement, gas defense division, chemical warfare section with offices in New York. He acted in that capacity throughout the war. Mr. Skemp was a member of the Scottdale school board many years and was president at the time of his death. He was also a member of the American Iron and Steel institute.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

CONTRACT has been awarded to Dwight P. Robinson & Co., Inc., New York, for the design and construction of a complete sulphur mining plant at Hoskins Mound, Tex. for the Freeport Sulphur Co., New York and Freeport, Tex. The company now operates a large sulphur mining plant at Freeport, consisting of four units which were built by Westinghouse, Church, Kerr & Co., which has been merged into Dwight P. Robinson & Co., Inc., from 1913 to 1918. This plant contains one of the largest installations of oil burning boilers in the world. The Freeport company has sulting engineer for the new installa- retained Cloyd M. Chapman as contion.

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MACHINERY for canning factories will be manufactured by the Hansen Canning Machinery Corp., a new company organized at Port Washington, Wis., with a capital stock of $200,000 by O. L. Hansen, inventor and designer of the machinery, J. P. Dennett and P. A. Winner.

* * *

THE Phoenix Iron Works Co., Meadville, Pa., has just been awarded a contract for an additional twenty 80,000-barrel tanks by the Sinclair Crude Oil Purchasing Co., for Cushing, Okla., making a total of 48 tanks of this size being erected at Cushing by the Phoenix company for the Sinclair interests.

* * *

AN ORDER for wire weaving machines has been placed with the Whitmore Foundry & Machine Co., Menasha, Wis., by Ralph H. McCloskey, of H. E. McCloskey & Sons Co., New Haven, Conn., wire manufacturer. The Whitmore company built looms for manufacturing screens and other woven wire appliances for paper and pulp mills.

* * *

AT A recent meeting of the stockholders of the New Britain Machine Co., New Britain, Conn., the following directors were elected: Leon P. Broadhurst, president of the Phoenix National bank, of Hartford, Conn., E. M. Day; John H. Goss, vice president of the Scovill Mfg. Co., Waterbury; E. A. Moore, president of the Stanley Works, New Britain; John E. Otterson, president of the Wincester Repeating Arms Co., New Haven; H. H. Pease, president and treasurer of the New Britain Machine Co., P. K. Rogers, treasurer of the Skinner Chuck Co., New Britain; W. S. Rowland of the Stanley Chemical Co., New Britain; A. W. Stanley, and P. B. Stanley of the Stanley Works, New Britain.

* * *

ACTUAL transfer of the tools and machinery of the F. Rosenberg Elevator Co., Milwaukee, from 174-178 Reed street to its new plant at 1645 Richards street, is rapidly being completed. The company is a pioneer builder of hydraulic and electric freight and passenger elevators. The new factory cost about $125,000.

* * *

MANUFACTURE of fans, motors, grates and other appliances for heating systems is the object of the Holmer Forced Draft System, Inc., Milwaukee, a new $25,000 corporation organized by A. A. Guilliaume, 2105 Grand avenue; Frank P. Burke, attorney, 900 Trust building, and Edward Holmer, engineer all of Milwaukee.

* * *

APPOINTMENT of G. F. Sherratt as manager of the Pittsburgh office of the Chain Belt Co., Milwaukee, will not affect representation of certain lines of the company, it is announced. The Ward Equipment Co., Pittsburgh, will continue to handle the line of concrete mixers and pavers and the United Equipment Co., Pittsburgh, will continue as agent for the traveling water screens.

* * *

AT THE adjourned annual stockholders meeting recently, the Crompton & Knowles Loom Works, Worcester, Mass., elected the following officers: President, Dr. Homer Gage; vice presidents, Frederic W. Howe, John F. Tinsley, who is also general manager, and Irving H. Verry, in charge of sales; treasurer, Edward F. Green; clerk and assistant treasurer, Fred J. Bowen; directors, the officers and Syderham B. Alexander Jr., George Crompton, Albert A. Gordon Jr., Charles H. Hutchins, Lawrence B. Jenckes, Frank P. Knowles, Henry H. Merriam, John B. Syme and Charles M. Thayer, who is general counsel.

* * *

THE Reed-Prentice Co., Worcester, Mass., held its annual meeting in Boston, April 7, when the following officers were elected: President, A. H. Weed; vice presidents, Malcolm Donald and George A. Gaskill; treasurer, J. W. Lund; assistant treasurer, M. G. Hastings; and directors, A. H. Weed, J. W. Farley, Malcolm Donald, J. W. Lund, George C. Lee, Henry P. Kendall and George A. Gaskill.

* * *

RACINE, Wis., has been selected as the new location of the Stover Signal Engineering Co., now at Cleveland, manufacturing automatic signals for automobiles and a line of signal devices for other purposes. C. C. Mortensen, treasurer and general manager, concluded negotiations at Racine recently and returned to Cleveland to arrange for the transfer of the plant and offices. Paul A. Stover is president of the company.

* * *

WILLIAM K. STAMETS, Jenkins Arcade building, Pittsburgh, machinery and machine tools, recently concluded arrangements for the representation of the Billings & Spencer Co., the Hanson-Whitney Machine Co., the Hartford Tap & Gauge Co., the Taylor & Fenn Co. and the Whitney Mfg. Co. The Cleveland office, in charge of George D. Miller, recently was moved from the Hickox building to 974-976 Kirby building.

* * *

CONSOLIDATION of the Tomah Iron Works and the Janke Automobile & Machine Co., both of Tomah, Wis., has been effected by the organization of a new company known as the Tomah Iron Works & Garage, Inc., capitalized at $30,000. Directors are: President and general manager, R. S. Murray; vice president, C. A. Murray; secretary, Carl A. Sweet; treasurer, W. W. Warren; and director, H. M. Warren. The new coporation took formal charge of the business April 5.

Plan To Penalize High-Ash Coal

Members of Southern Ohio Pig Iron and Coke Association Discuss Problems of Blast Furnace Operation—Rule for Calculating Coke Consumption Justified by Experience—President Reviews Work of Association

PENALIZING coal high in ash because of careless mining and loading, is advocated by members of the Southern Ohio Pig Iron and Coke association who have a workable plan in mind. This plan was made plain by President R. H. Sweetser, who is assistant to the first vice president of the American Rolling Mill Co. at Columbus, O., at the meeting of the association at Ironton, O., on April 4. The penalty involves placarding a car of high-ash coal with a "scarlet letter A".

The association also learned further details of the remarkable blast furnace production records due largely to following the rule of the association in calculating the coke consumption according to cubic feet of furnace working capacity and the consensus of opinion of the half hundred members present was the rule is justifying itself in a practical way. Charles R. Peckles, Ironton, O., is chairman of the committee on furnace rating that formulated the rule.

On motion, the committee of the American Society for Testing Materials charged with the duty of preparing definitions and methods of sampling, was asked by the association to hold up its suggested report on sampling coal because the prevalent business depression did not permit of sufficient time to work it out practically.

The sessions, both afternoon and evening, were held in the Hotel Martin, Ironton, members being present from all over the district. A motion prevailed amending the constitution so a division of the membership shall be made, those actually residing in the district to be active members and those from outside being nonvoting members. Complete review of the most recent accomplishments of the association and plans for the future were set forth fully in the address delivered by President Sweetser which follows:

"The several high records of pig iron production in the blast furnaces of this country, especially in the Middle West, reported lately in THE IRON TRADE REVIEW and other trade papers, and the high records that have not been published, are indications of the improvements now taking place in blast furnace practice. Some of these improvements were "on the way" just prior to the world war, but were neglected or forgotten during the war in most cases; it would have been better all around if there had been a clearer understanding of certain metallurgical facts that are now becoming parts of the blast furnace practice.

"Most of the recent records of high tonnage and low furnace consumption have been made by blast furnaces whose previous records were not above the average. It is natural to expect, however, that the present pressing need of economy in operations would bring about some improvements in tonnage and costs. But,—something else has taken place; there is a decided advance in the "state of the art", and real progress has been made in blast furnace practice. The greatest advance has been made in putting through an individual blast furnace a larger amount of iron bearing material than ever before. This has been made possible

By the burning of a larger amount of coke within 24 hours;

By increasing the average percentage of iron contents of the mixture;

By the prevention of excessive flue dust in putting the materials through the blast furnace.

"All three of these important items have contributed to greatly increased tonnage at less cost and with less trouble than ever before.

"These increased tonnage records had been made with practically no great changes in the mechanical equipment of the blast furnaces, and in some cases have been made in points with equipment that has been generally considered out of date and perhaps insufficient.

Association Rule Is Criticized

"In all the cases that I have personally examined I have found that the blast furnace in question has been burning as much or even more coke in 24 hours than the "ideal" amount of coke requried by the rule adopted by our association, which rule calls for 60 pounds of coke per cubic foot of working capacity in 24 hours. At the time this rule was decided upon and first published there was much criticism of the rule, and even our right to publish such a rule was questioned.

"One man wrote in October, 1920: 'Beg to advise that I cannot agree with you on the working volume of a blast furnace that you have adopted. I believe that the actual working volume is that in which combustion of the coke takes place, and it seems that this would be more likely to be the bosh, or some fraction thereof'".

"Another man in the Pittsburgh district wrote under date of Oct. 27, 1920: "I have checked in detail the operation of 12 blast furnaces in two groups of our company, and also about 40 other blast furnaces at different points, and making whatever allowances you might care to, nowhere do I find anything like the rating you mention. I wonder if you have made yourself clear on this subject, for there is hardly any big blast furnace today that would not be making 600 tons per 24 hours as this for a basis."

"Another man in charge of a large group of blast furnaces wrote: "Your ruling introduces this matter in an entirely different manner from that in which we have been accustomed to thinking of it. But we think it would be unwise for your association to formulate a ruling of this kind without giving it further consideration."

"The answer to the above criticisms is that several furnaces operated by members of our association have more than accomplished the rating adopted by our association in 1920. It has been my observation that where furnaces have not been able to burn the required amount of coke there has been something wrong either with the coke or the equipment or the management, and all of these items can be overcome.

"In summing up the question of furnace capacity I am convinced that in all cases it is necessary for the furnace management to know what production should be achieved in a furnace of a certain size, and I am more convinced than ever that the rule adopted by our association is the right and proper measuring stick for such capacity.

"Our association has provided a measure for the capacity of a blast furnace. We have also considered the method of sampling iron ores and our method of inspection of sampling at Lake Erie ports has provided our membership with a means for checking the samples obtained.

"The next important thing that we have given attention to is the question of coke. Unfortunately during the year 1920 there was much inferior coke put on the market, caused almost entirely by the inferior grades of high ash coal shipped from mines all over the country. Beginning with June, 1920, there was a scramble to obtain coal that resulted in some of the most wasteful and expensive practices that ever crept into any industry. The shame of the whole matter lies with the consumers of coal as well as with the operators of the coal mines.

"Such a condition of wasteful operations should never again occur in this country. The country was producing bituminous coal at the rate of 600,000,000 tons per year and the increase in ash above normal analysis has been estimated to be as high as 5 per cent. This 5 per cent of 600,000,000 tons of coal amounted to 30,000,000 tons of coal, which required at the rate of 50 tons per car 600,000 additional cars to haul from the mines to destination waste material in the shape of ash, clay, slate and other dirt, which not

only was of no value but was paid for at the going rate for coal. During that mad scramble for coal the consumers actually gave premiums to the coal operator and the coal miner for putting on the market this excess ash, and instead of penalizing the production of worthless ash we presented the coal operators and coal miners with a golden reward, and in many cases for each increased percentage of ash in the coal we added one more dollar to the price we paid, and it was an actual fact that in many cases a price of $12 to $15 per ton of coal was paid for coal that carried from 12 to 15 per cent in ash.

"There were many remedies suggested, but none of them were carried out until there came a time when there was more coal than was demanded by the market.

"I would like to suggest to the members of our association, and to the consumers of bituminous coal in general, that instead of rewarding the producers of high ash coal with a golden chain of ever increasing high prices, that we hang on such producers the stigma of their shameful practice, and I would suggest that we brand high ash coal with the scarlet letter "A", which would be a sign to everybody that the producer of the high ash coal was willing adulterator, I would have a placard on every car of high ash coal, and the higher the ash, the higher would be the scarlet letter "A".

"All of us who are acquainted with coal mining know that in most cases it is possible to produce clean coal, but as soon as it becomes easier to *load* slate, and as soon as it becomes more profitable to *ship* slate there will be a constant temptation to miner and operator to let this more than useless material go into the market.

"I suggest to our association that each and every member do his part toward the elimination of this most expensive and foolish waste caused by increase of ash in the coal.

"There is still another raw material used in blast furnaces that is susceptible of improvement, and to which we should now give attention, and that is the question of the proper kind and size of blast furnace flux. Usually the cost of limestone in the past has been rather low, and we have not given much attention to this very important material. I recommend that our members now direct their attention to the proper sizing and cleaning and analysis of blast furnace flux."

Year Alien Ban

Washington, April 11.—Extension of the present immigration act, limiting incoming aliens in one year to 3 per cent of the number in the United States in 1910, for three years is proposed by the senate immigration committee. A few weeks ago the house voted to extend the law one year, or until June 30, 1923. The senate's substitution of three years would postpone at least until the next session of congress a general revision of immigration laws.

Steel Employment

Gains 5.3 Per Cent in Month—Conditions More Favorable

Washington, April 11.—Employment in representative iron and steel plants was 5.3 per cent greater on March 31 than on Feb. 28 while for all of the 14 industries surveyed by the federal employment service, of the department of labor, the average increase was 2.5 per cent, or less than half the iron and steel gain. The iron and steel industry was one of the 10 to report increased employment at the end of March; only four revealed a decrease. Of the 65 cities surveyed, 43 reported more persons employed at the end of March than at the end of February.

In the automobile industry the increase for March 31 over Feb. 28 was 8.4 per cent, for metals and metal products other than iron and steel 4.9 per cent, and for railroad repair shops 1.5 per cent. The increase in Johnstown, Pa., was 11.8 per cent; Youngstown, O., 10.5; Detroit 8.1; Pittsburgh 6.8; Chicago 5.6; Milwaukee 4.8; St. Louis 4.6; Buffalo 3.5; Cleveland 2.1, and Cincinnati 0.36. The only city falling within the iron and steel classification to show a decrease for March 31 was Reading, Pa., and there the slump was only 0.4 per cent.

Francis I. Jones, director general of the employment service, comments:

"Industry took up considerable slack in March, showing an improvement of 2.5 per cent over February and 7 per cent over July, 1921, which was the low-water mark in employment. Business will not come back with a jump, but every indication points to a general progressive upward movement. The coal situation may check improvement in certain lines of industry, interrupting a steady healthy swing heading to normal condition. However, there is a general pronounced optimistic feeling that warrants the statement that April will show increased activity, other than in coal and cotton textiles."

The national unemployment conference states that more encouraging reports have been received recently not only as to improvement in local conditions but also in the organized methods of communities to deal with the situation. It says: "The upward trend, while not great, still continues to hold, with the number of jobs slightly increased, coupled with a corresponding decrease in the number of applicants, a most hopeful sign."

Government Board To Act in Mine Dispute

Toronto, Ont., April 10.—The protracted wage dispute between the British Empire Steel Corp., and the Nova Scotia coal miners is still unsettled. After the miners refused to accept the schedule of wages agreed on at a conference of the corporation officials and the representatives of the union the secretary of the United Mine Workers ordered the men to "strike on the job" with a view to limiting the output so as to eliminate profits. This action was strongly condemned by James Unidock, federal minister of labor and was disregarded. The dominion government has decided to reconvene the Gillen conciliation board as the miners are favorable to a new hearing of the case, though suggesting that the personnel of the board be changed.

Federal Labor Officials To Hold Convention

The ninth annual convention of governmental labor officials of the United States and Canada will be held May 22 to 26 at Harrisburgh, Pa. Clifford B. Connelley, Pennsylvania commissioner of labor and industry, has invited the 75 labor commissioners of the United States and Canada, to be present.

The annual meeting of the Pennsylvania department of labor and industry will be held at the same time and will include such group sessions as were found at the industrial relations conference at Washington last October. Not less than 1000 people are expected to be present.

The tentative program of the governmental labor officials convention includes a child welfare session, inspection, safety and sanitation session, employment, mediation and conciliation, workmen's compensation, medical supervision, and rehabilitation sessions, and minimum wage and hours session.

Officers of the Association of Governmental Labor Officials are: Frank E. Wood, commissioner of labor and industrial statistics of Louisiana, president; Dr. C. B. Connelley, commissioner of labor and industry, Pennsylvania, first vice president; Miss Ethel M. Johnson, assistant commissioner of labor and industries of Massachusetts, second vice president; H. M. Stanley, commissioner of labor of Georgia, third vice president; Francisco Varona, director of labor bureau, Philippine Islands, fourth vice president; J. N. McLeod, chief inspector, Calgary, Alberta, Canada, fifth vice president, and Miss Linna E. Bressette former director of women's work, court of industrial relations of Kansas, secretary-treasurer.

Equipment Demand Is Improving

Machine Tool Orders and Inquiries Are More Numerous—South African Interest Wants $60,000 of Tool Equipment—Secondhand Machinery Still Is Preferred by Buyers—Improvement in Crane Demand Is Steady

DEFINITE improvement, both in orders and inquiries for machine tools and shop equipment is reported by dealers and manufacturers in all sections of the country. During the week considerable business was placed, and while most orders were for single tools, the total moved was of fair size. Fabricating machinery is in demand as are car wheel boring tools, etc. The New York Central, the Nickel Plate and several other roads made small purchases.

At no time since the first of the year have inquiries been more numerous. While generally for single tools several of them involve as many as 40 machines. Makers have received an inquiry from a South African manufacturer for approximately $60,000 of machine tools action on which is expected to be taken shortly. The Robert Dollar Co. is asking for figures on a quantity of tool equipment, while lists have been issued by the Sugar Pine Co., Fresno, Cal., the Durant Motor Car Co., Oakland, Cal., the Burlington and Santa Fe railroads, the Wheeling Steel Corp., and the General Electric Co. Bids still are being submitted on the inquiries issued by the Youngstown, O. and the Cleveland boards of education. Approximately $15,000 of tools will be purchased for the Hetch Hetchy project in California.

Prices are soft. While actual reductions have not been announced it is understood new tool quotations now are more in line with those asked for secondhand machinery. Used equipment is being moved at a much greater rate than new.

Five overhead cranes have been inquired for by Jenks & Ballou, Providence, R. I., for the Narragansett Electric Lighting Co. The American Sheet & Tin Plate Co. still is in the market for a 40-ton crane, while Okura & Co., New York, has asked for quotations on a 30-ton electric wharf crane for export. Numerous single crane orders were placed during the week and crane makers report inquiry continues to be received at a great rate. Foundry equipment demand is better. In this connection one inquiry from a steel foundry calls for prices on approximately $100,000 of equipment.

Tool Purchases Are Larger as Production Gains

NEW YORK, April 11.—While the bulk of trading in the eastern machine tool market is comprised of orders for single machines, business is coming out on an increasing scale. Several orders for fabricating equipment are noted. The Lamson Co., Lowell, Mass., purchased a gate shear and two punches from the Southward Foundry & Machine Co., Philadelphia, Pa., and bought a Hillis & Jones angle shear at Hog Island. The Palmer Steel Co., Holyoke, Mass., is fitting out a fabricating shop and has purchased approximately seven machines from the Cleveland Punch & Shear Works, Wickliffe, O., and has also placed orders for a friction saw and an air compressor. Some of the fabricating machines were erroneously reported last week as going to another company.

The New York Central railroad recently bought eight punches and shears from the Shipping board's supplies at the Merchant shipyard, Bristol, Pa. Five were Cleveland machines and three Hillis & Jones. The American Car & Foundry Co., 165 Broadway, New York, bought an angle shear from Williams White & Co., Moline, Ill. The Monitor Bi-Loop Radiator Co., Lancaster, Pa., closed on boiler shop equipment, including 14 items, the Southwark Foundry & Machine Co., Philadelphia, getting the business. New inquiry includes six engine lathes, two shapers and a turret lathe for the General Electric Co., Schenectady, N. Y.

An inquiry has been issued by Jenks & Ballou, Providence, R. I., engineers, for five overhead electric cranes for the Narragansett Electric Lighting Co., of that city. Specifications call for two 10-ton cranes, with 47-foot span, one 1½-ton crane, with 38-foot span, and two 1-ton cranes, with 17 and 23-foot spans, respectively. Okura & Co., 50 Church street, New York, are inquiring for a 30-ton electric wharf crane for export. This inquiry is also being issued through other local exporting houses. Davies & Thomas, Catasauqua, Pa., have informally placed orders for one 7½-ton electric crane and two jib cranes, understood to be of five tons capacity. At least one other electric overhead crane will be placed later. Action on the 1-ton electric overhead crane for the Advance Boiler Corp., Poughkeepsie, N. Y., is expected to be taken this week. The Northwest Mining & Exchange Co., Brockwayville Pa., closed on a 3-ton single I-beam handpower crane the Reading Chain & Block Corp. Reading, Pa., getting the order.

Anticipate Greater Buying Movement

PITTSBURGH, April 11.—Interest in equipment continues to revolve about the several crane projects being closed as well as a number of others which are about to reach that stage. Machine tool sellers, while disposing of a fair number of tools each week, anticipate a greater buying movement within the next month or two. One inquiry involves the expenditure of $25,000 to $30,000.

Inquiries for individual tools call for a 48-inch planer, one or two 24-inch turret lathes, an 8-foot x 3/8-inch capacity plate shear, a large vertical grinder, etc. A local buyer is in the market for three large plate shears. Machine tool sellers report many of their customers are working present equipment to capacity and some in the Ohio valley are working overtime. The Wheeling Steel

Corp. is negotiating for more equipment and some local sellers are working upon the Youngstown, O., high school list. One seller reports the sale of a 31-inch drill to a nonunion coal mine operator in Johnstown, Pa. and two electric drills elsewhere. Considerable small equipment is moving. The recent reduction of 30 per cent on heavy duty lathes by the Pittsburgh Machine Tool Co. has not been followed by many orders. On used machinery a number of small machines are being sold on an exceedingly small margin. A 2 x 24-inch turret lathe was sold to a California user this week while a southern user purchased a 24-inch x 14-foot lathe here. Inquiries are fairly numerous for big machines. Some progress is being made in disposal of the plant of the Marshall Foundry Co. although so far only small units have been disposed of. Numerous buyers are figuring on the cranes while others are figuring on the buildings together with the cranes.

In connection with rolling mill machinery producers are working on inquiries for estimating purposes and are receiving orders for rolls, coupling boxes, spindles, etc. Crane projects closed this week include a 110-ton for the West Penn Power Co., the award going to the Cleveland Crane & Engineering Co., Wickliffe, O. The Northern Engineering Works, Detroit, will build a 5-ton crane trolley for the Connellsville Mfg. & Mine Supply Co., Connellsville, Pa. The Pittsburgh Steel Co., Monessen, Pa., purchased two 5-ton Alliance mill type overhead electric traveling cranes and the Allegheny county commissioner purchased a No. 2 Brownhoist for asphalt plant use. The American Sheet & Tin Plate Co., is about to close on a 40-ton crane for its McKeesport works and other inquiries are fairly numerous, some from several other units of the United States Steel Corp.

The foundry equipment trade is greatly encouraged over prospects. One inquiry calls for about $100,000 of equipment for a steel foundry. This includes core ovens, core machines, mixers, wire straightener, etc. Another steel foundry wants a complete sand blast outfit and an eastern user has been negotiating for two 108-ton cupolas. Core ovens are to be purchased by the Pittsburgh Valve, Foundry & Construction Co. and a number of foundries are obtaining quotations on molding machines. One Milwaukee foundry purchased two small molding machines from the Herman Pneumatic Machine Co. The Wehre Co., Newark, O., bought a complete sand blast outfit with tables, etc.

Equipment Demand Steadily Improving

CLEVELAND, April 11.—Dealers in machine tools and shop equipment in this district report demand is steadily improving. Secondhand machinery, however, continues most in demand and practically all orders placed are for this class of equipment. New tools, however, are moving in a slightly better volume than they have for some time past. While secondhand tool prices still are extremely low, it is understood new tool quotations now are more in line with the used tool prices, and dealers are not experiencing as much trouble in selling the new tools over the question of price, as they have in the past.

During the week past there were few sales of importance. The largest noted was that of four tools to a Pacific Coast interest by a local dealer. Another local dealer reports the disposal of one milling machine, two radial drills, one lathe, a grinder and an air compressor during the week. The Nickel Plate railroad purchased a radial drill and it is understood this interest now has purchased all the equipment for which it recently entered the market. So far as can be learned other railroad buying in this district is being confined to small items. The largest inquiry current here is that which was reported a week ago from the Youngstown, O., board of education for approximately 37 tools. Dealers are filing quotations on this list as well as on that of the Cleveland board of education's list issued several weeks ago. Some buying against the latter list is expected shortly. Inquiries are numerous but with few exceptions are for single tools. It is understood the U. & J. Carburetor Co., Chicago, is in the market for automatic screw machines, punch presses, lathes, etc. The Corry-Jamestown Mfg. Co., Corry, Pa., wants two punch presses. The Stewart Motor Corp., Buffalo, wants a punch press. The Baker-Vawter Co., Benton Harbor, Mich., wants a roll angle straightener. In addition to these there are numerous others, including several from car repair shops for car wheel boring tools, etc. Inquiry for this latter type of equipment is said to be increasing steadily. A South African interest is inquiring for a quantity of machine tools, which will involve an investment of approximately $60,000. It is said closing action on the list is expected within the next few weeks.

While outstanding orders and inquiries for cranes are lacking, it is understood there are numerous small jobs being figured on which give indications of closing shortly. A number of postponed projects are being revived and factory construction is slowly picking up. These indicate a developing market for crane equipment, makers state.

Machine Tool Inquiry Improves

BOSTON, April 11.—While machine tool demand is large definite progress appears to be under way. Dealers report more new machines sold in comparison to secondhand as the season develops and inquiry is reported better. During the past week the district comprising western Massachusetts and Connecticut fared better than eastern New England. Many western New England plants are increasing production and are adding to machine tool equipment. Several Boston dealers report sales of tools to Springfield and Hartford companies. The city of Boston closed on its list of 10 or 12 tools which has been out for several weeks covering equipment for the East Boston high school. This list was split among four dealers in Boston and included among other tools, a shaper, a sensitive drill, a planer, grinder, and several lathes. Other orders include three tools for a Rhode Island mill; two tools for a Boston manufacturer of automobile accessories and scattered single tools to a large variety of users.

Prices still are soft and manufacturers bidding direct are known to have cut prices in some cases to exceedingly low figures. New England tool manufacturers almost universally report an improvement since the first of April. Heavy equipment dealers report better inquiry but few actual sales. The city of Boston is taking bids for derricks to be used on the East Boston tunnel work and the Boston Elevated railway is in the market for considerable plant equipment for its South Boston power plant, it is understood.

Sales and Inquiries Are Still Limited

CHICAGO, April 11.—Dealers in machine tools continue to find business difficult with practically no inquiry and selling confined to single tools. Sales are of light equipment, heavy tools not being in demand. Although manufacturers generally are meeting greater demand for their products, they have sufficient equipment to meet needs. The Santa Fe railroad continues to inquire for tools and recently has put out requests for figures on three 18-inch lathes, a four-inch forging machine, a boring mill, a 15-ton crane.

a No. 4 drilling machine, sand blast equipment, a flue weld machine and a flue expander, a 36-inch shaper, draw cut, a rip saw and a band saw. The Burlington railroad has inquired for a 26-inch drill press and a 24-inch lathe. No buying has been done by railroads during recent weeks, although considerable machinery is needed by these users, as evidenced by the lists on which quotations have been made.

The Whiting Corp. has sold a 100-ton locomotive hoist to be shipped to China. Demand for foundry equipment is considerably better. The National Engineering Co. has sold four sand mixers, two for delivery in Canada, one in Milwaukee and another in Detroit.

Pacific Coast Demand Is Improved

SAN FRANCISCO, April 7.—Machine tool and equipment dealers here report sales in the last half of March showed a decided improvement over those during the first part. Inquiries received a month or six weeks ago are turning into sales and several good sized lists now are before the trade. Auto repair shops have been the heaviest buyers of late. Among sales reported are two 16 x 8 lathes, one 24-inch engine lathe, one 9000-pound power punch, a large gear cutter, one 9 x 4 lathe two grinders, one 25 x 16 motor-driven lathe, three Sidney lathes, two 11 x 5 Star lathes, one 16 x 8 Le Blonde lathe, one 9 x 4 Star lathe, one power squaring shear motor-driven, one 24 x 28 shaper and one 24 x 28 motor-driven shaper besides the usual run of small presses, bench drills and grinders.

Bids are being taken for about $15,000 of tools for the Hetch Hetchy project. The Durant Motor Car Co. is asking for prices on new tools. The state department of public works, Sacramento, opened bids on a large list of miscellaneous equipment including a 3-foot and a 3½-foot radial drill, a milling machine, an auto parts grinder, a cylinder grinder, a small drill press, a 200-ton tire applying press and some woodworking machinery including a 30-inch band saw and a 12-inch planer and jointer. The Sugar Pipe Co., Fresno, is taking bids on a list which includes a 20-inch heavy-duty lathe, a 27-inch x 28-foot heavy-duty lathe, a 19-inch x 16-foot heavy-duty lathe, a 30-inch x 30-inch x 10-foot planer, three 26-inch heavy-duty sliding head drill presses, a 2-inch bolt threading machine, an 8inch heavy-duty pipe threading machine and an 800-pound steam hammer and a number of smaller tools. The Robert Dollar Co. is asking for figures on four 16-inch x 8-inch foot lathes and four 20-inch drill presses.

Crane men report a slightly better demand coming in for hoists and cranes. There is still a quantity of surplus equipment yet to be absorbed. A road contractor recently purchased a 15-ton Brown Hoist locomotive crane. Bids will be received on April 18 by the board of public service, 207 South Broadway, Los Angeles, for one 25-ton traveling crane. The port of Grays Harbor, Aberdeen, Wash., will open bids on April 11 for one 5-ton, 95-foot traveling hammerhead crane. The engineering department of the Union Pacific railroad has plans for the construction of terminals and docks at East San Pedro, Los Angeles harbor, which will be equipped with modern freight handling machinery. The Columbus drainage district, Portland, Oreg., T. A. Garrow, 617 East Tenth street, Portland, engineer, plans a project which will call for one traveling overhead crane.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

HARTFORD, CONN.—The Yokel Corp., maker of lamps, has let the contract for a 24 x 94-foot factory addition.

NORWICH, CONN.—The Eastern Connecticut Power Co. has increased its capital stock from $1,500,000 to $4,000,000.

JACKSONVILLE, FLA.—The Flynn Products Co., metal products, has been incorporated with $100,000 capital stock by E. A. Duncan, E. M. Price and others.

MILTON, FLA.—J. M. Campbell plans a shipbuilding and repair plant.

CHICAGO—The Champion Pneumatic Machinery Co., 1402 South Michigan boulevard, has bought a factory site, 150 x 184 feet.

CHICAGO—The Chicago Wheel & Spring Co., 414 West Thirty-fourth street, plans a 2-story factory building, 50 x 50 feet, to cost $30,000.

CHICAGO—The Greenduck Metal Stamping Co., 2127 Tilden avenue, has been incorporated with $100,000 capital stock by William U. Watson, and others.

CHICAGO.—The Monarch Mfg. Co., Inc., 625 West Jackson boulevard, has been incorporated with $100,000 capital stock to manufacture and deal in automobile accessories, etc., by George Abrahams, Leo W. Froehlich, James W. Brown, Benjamin Franklin and others.

CHICAGO—The Venetian Liberty Coaster Co., 517 North Western avenue, has let a contract for a factory building, 1-story, 50 x 116 feet, to cost about $8000.

CHICAGO—The L. W. Smith Co., manufacturer of jewelry, 320 North May street, is erecting a factory building, one story, 100 x 150 feet.

CHICAGO—The Block Can Co., 18-20 East Kinzie street, has been incorporated with $10,000 capital stock to manufacture sheet metal, etc., by Moses Block, Louis Katzen and others.

CHICAGO—The American Radiophone Corp., 1140 Otis building, has been incorporated with $100,000 capital stock by George McClellan Hoke, Albert E. Davis and A. M. Johnson.

CHICAGO—The Middle West Power Co., 72 West Adams street, has been incorporated with 100 shares of no par value, by William L. Latimer, H. C. Joy, L. J. Clark and others.

CHICAGO—The Schillo Proctor Co., 2415 West Fourteenth street, has been incorporated with $14,000 capital stock to manufacture and deal in structural and ornamental iron work, etc., by Charles S. Schillo, Ralph Proctor and Daniel M. Healy.

CHICAGO.—The Scientific Metal Products Co., 658 West Division street, has been incorporated by Richard Dreiss, Edward I. Bucklin and Frank Nemec.

CHICAGO.—The Reliance Heating Co., 3809 North Kimball avenue has been incorporated with $1000 capital stock by John Lundquist, C. J. Kohlman and George W. Lundquist.

CHICAGO.—The Pearl & Radio & Electric Corp., 127 North Dearborn street, has been incorporated with $10,000 capital stock by Samuel Pearson, William Klompus and A. N. Lustig.

CHICAGO.—The Quadrangle Mfg. Co., 553 West Monroe street, has been incorporated to manufacture electrical fixtures, etc., by D. E. Worrell, Louis A. Bishop, George Arras and Emma Lavman.

CHICAGO—The Manufacturers Production Parts Co., Inc., 3266 West Grand avenue, has been incorporated with $20,000 capital stock to manufacture and deal in automobile parts,

etc., by Herman W. Freund, Charles N. Freund and Walter H. Rietz.

CHICAGO—The Hydro Electric Generator Co., 30 North La Salle street, has been incorporated with $10,000 capital stock by George H. Shanks, Robert W. Dunn, Frank H. Foster and others.

CHICAGO—The Jack Frost Co., 220 South State street, has been incorporated with 100 shares of no par value to manufacture machinery, et., by William R Durgin, Frank Carsey, Thomas Weinstein and others.

CHICAGO—The Marshall Electric Co., 10 South La Salle street, has been incorporated to manufacture and deal in machinery, motors, etc., by Otto B. Schram, Claude F. Smith and Thomas Marshall.

CICERO, ILL.—The Magnesite Products Co., has been incorporated with $50,000 capital stock by A. J. Petit Jr., F. W. Snider and Edmud S. Cummings.

ROCKFORD, ILL.—The Rockford Electric Co. plans a power plant addition.

INDIANAPOLIS—The Union Steel & Wire Co. has been incorporated with $10,000 capital stock to manufacture nails, tacks, metal devices, etc., by J. L. Baugh, N. R. Baugh and C. S. Baugh.

TERRE HAUTE, IND.—The Goodman & Wolfe Co., Tenth and Crawford streets, has purchased a 6-acre tract on which it is reported planning to erect a plant.

LOUISVILLE, KY.—The Henry Vogt Machinery Co., Tenth and Ormsby streets, plans a 3-story plant addition, 40 x 180 feet, to cost about $75,000.

LOUISVILLE, KY.—The Apex Refrigerating Products Co. has been incorporated with $10,000 capital stock by H. J. Cline, Richard Fenley and John W. Rolli.

AUGUSTA, ME.—The state has let the contracts to the Boston Bridge Works, Inc., Boston, for a steel bridge in Gilead and another in Strong for $17,009.50.

KITTERY, ME.—Ross & Harris, Inc., has been incorporated to deal in machinery, tools, etc., by Horace Mitchell, John H. Harris, and others.

BALTIMORE—The Chicago Nipple Mfg. Co., Chicago, is reported planning to establish a plant here.

BALTIMORE—The Baltimore Tank & Tower Co., 1223 Leadenhall street, has been incorporated with $500,000 capital stock by Henry A. Brehn, Julius H. Wyman and John B. Berger.

BALTIMORE—The Industrial Machine Corp., 501 East Preston street, has been incorporated with $200,000 capital stock by Whitney W. Jones, Herman Gamse and Addison W. Brock.

BOSTON—Shawmut Steam & Power Co. was incorporated recently by Frank A. Ewatt, Samuel J. Craddock and Charles F. Gehling.

BOSTON—Boston Cornice & Metal Works, Inc., has been organized with $5000. William Kelly, of Peabody, Mass., is treasurer.

BOSTON—The Nash Carriage Co., 841 Massachusetts avenue, plans a manufacturing plant, one story, 107 x 114 feet.

BOSTON—J. S. Hartley, Inc., has been incorporated with $500,000 capital to build machinery by George B. Arnold, Stoneham, Mass., Charles W. McDermott, Brookline, Mass., and Thomas H. Ray, Wellesley, Mass.

BOSTON—The Tigar Bearings Co. has been incorporated with $10,000 capital by Jacob A. Tigar, Morris Tigar and Louis C. Tigar, all of Chelsea, Mass., and M. George Tigar, New York.

EVERETT, MASS.—The Everett Factories Corp. has let the contract for a 4-story, 160 x 169-foot factory building to cost about $65,000.

FALL RIVER, MASS.—The Fall River Sheet Metal Co. has been incorporated by John H. M. Svel, Alfred Cockshutt and J. Edward Ivel.

FALL RIVER, MASS.—The Fall River Gas Works Co. has let the contract for a water gas generating plant to be built at an estimated cost of $500,000.

GARDNER, MASS.—Smith & Leavitt, Inc., has been incorporated with $35,000 capital to make scientific instruments, etc., by William David Smith and Paul Dudley Dean, both of Brookline, Mass., and Ernest Leavitt.

HAVERHILL, MASS.—The Miller & Drury Engineering Corp. has been incorporated with $50,000 capital stock by William F. Miller, John D. Drury and Alfred H. Miller, Lawrence, Mass.

HOLYOKE, MASS.—The Palmer Steel Co. has been incorporated by Earl Palmer, Memphis, Tenn., Raymond E. Palmer and Wayne F. Palmer.

LOWELL, MASS.—Middlesex Machine Co., has been incorporated with $60,000 by John Carragher, John J. Gookin and Charles Shepard.

SPRINGFIELD, MASS.—The Springfield Blower Co. plans a plant addition.

SPRINGFIELD, MASS.—The United States Spring Bed Co. has let the contract for a 1-story, 65 x 102-foot and a 2-story, 50 x 102-foot factory addition.

WORCESTER, MASS.—The Worcester Cold Storage & Warehouse Co. has let the contract for a 1-story, 60 x 100-foot addition.

DETROIT—The Le Grand Sheet Metal Co., 5390 Bangor street, has been incorporated.

DETROIT—Articles of incorporation have been filed by the Zimmer Sheet Metal Works, 12834 Oakman boulevard.

DETROIT—The Monroe Sheet Metal & Welding Co. has been incorporated with $11,000 capital stock, by Jacob Coplan, and others.

LANSING, MICH.—The Hugh Lyons Co., manufacturer of fixtures, auto bodies, etc., is erecting a 2-story manufacturing building, 60 x 240 feet.

ROCKFORD, MICH.—The Kirth-Krause Co. plans a 2-story power plant, 40 x 100 feet, to cost $55,000.

ASBURY PARK, N. J.—The Richelieu Motor Corp., 649 Mattison avenue, plans a plant building, 2-stories, 80 x 200 feet.

LITTLE FALLS, N. J.—The plant of the Western Cartridge Co. recently was damaged by fire.

NEWARK—A contract for a $50,000 storehouse for the Weimer Storage & Trucking Co., Elizabeth, N. J., has been awarded to the American Concrete Steel Co., this city.

NEWARK, N. J.—The McCabe Boiler Works has been incorporated with $150,000 capital stock by Eugene F. McCabe, John P. Ford and John M. McCabe.

PERTH AMBOY, N. J.—The Auto-Treat

Machine Tool Exports Still Are Fair

EXPORTS of machine tools, exclusive of grinding machinery, from the United States in January were valued at $183,981 and totaled 281 individual tools, according to figures recently compiled by the United States department of commerce, bureau of foreign and domestic commerce. The figures show that 77 lathes valued at $64,351, 156 boring and drilling machines valued at $84,435, 22 planers, shapers and slotters valued at $20,508, and 26 milling machines valued at $14,687, were exported during the month. Due to the fact figures as made available from the department of commerce differ in manner of presentation from those of other months, it is not possible to compare them with exports in preceding months. The following table shows where the tools were distributed:

Countries	Lathes No.	Lathes Dollars	Boring and drillings machines No.	Boring and drillings machines Dollars	Planers, shapers and slotters No.	Planers, shapers and slotters Dollars	Milling machines No.	Milling machines Dollars
Belgium	1	1,267	...	....	...	....	...	....
Denmark	...	....	...	....	1	850	...	....
France	8	8,669	...	....	2	3,218	1	675
Italy	1	913	...	....	...	....	...	....
Netherlands	1	20	25	153	...	....	...	....
Spain	...	....	1	802	...	....	...	....
Sweden	...	....	...	....	...	....	1	1,486
England	9	4,825	3	855	4	2,220	1	88
Canada, Quebec and Ontario	18	8,316	38	19,736	2	1,002	6	4,173
British Columbia and Yukon	...	....	42	128	...	....	1	114
Costa Rica	...	....	...	....	...	....	5	216
Salvador	...	....	...	....	...	....	6	351
Mexico	19	11,700	9	3,953	1	300	1	1,450

Countries	Lathes No.	Lathes Dollars	Boring and drilling machines No.	Boring and drilling machines Dollars	Planers shapers and slotters No.	Planers shapers and slotters Dollars	Milling machines No.	Milling machines Dollars
Jamaica	1	443	...	....	...	....	...	....
Trinidad and Tobago	1	651	...	....	...	....	...	....
Cuba	...	....	1	2,851	2	375	...	....
Argentina	...	....	16	810	...	....	...	....
Venezuela	...	....	2	14,739	...	....	...	....
China	...	....	...	....	3	1,500	...	....
Japan	15	25,091	9	20,105	5	6,432	4	6,134
Palestine and Syria	...	....	1	126	...	....	...	....
Philippine islands	1	550	2	376	2	4,611	...	....
Australia	2	1,906	6	12,201	...	....	...	....
Spanish Africa	...	....	1	7,600	...	....	...	....
Total	77	64,351	156	84,435	22	20,508	26	14,687

Co. plans to establish a plant for the manufacture of gasoline and oil pumping machinery.

PLAINFIELD, N. J.—The plant of the Plainfield Brass Foundry Co. recently was damaged by fire.

ALBANY, N. Y.—The Smith Bros. foundry recently was damaged by fire.

ALBANY, N. Y.—The Municipal Gas Co. plans a 1-story addition to its plant, 52 x 170 feet.

ALBANY, N. Y.—The Capital District Engineering Co. has been incorporated by G. L. Tobin, C. P. Kimmey and others. The company is represented by N. F. Towner.

BROOKLYN, N. Y.—The Lubin Gas Signal Co. has been incorporated by B. Lubin, I. Prussack and L. Lurie. The company is represented by S. Engel, 197 Havemeyer street.

BROOKLYN, N. Y.—The Riteauto Signal Co. has been incorporated with $25,000 capital stock by E. E. Steiniger, E. L. Wilkeson and O. P. Brown. The company is represented by C. G. Wademan, Linden, N. J.

BROOKLYN, N. Y.—The Metal Lamp Corp. has been incorporated with $10,000 capital stock by A. and S. Bergman and M. Kornblum. The company is represented by A. Beier, 305 Broadway.

BUFFALO.—The J. C. Linder Electric Co. has been incorporated with $50,000 capital stock by L. S. and W. A. and J. C. Linder. The company is represented by Bartlett & Roberts.

CHASEY, N. Y.—The West Chasey Electric Co. has been incorporated with $25,000 capital stock by J. F. and E. L. and J. L. O'Brien. The company is represented by C. M. Harrington, Plattsburg, N. Y.

DANSVILLE, N. Y.—The Livingston Light & Power Co. has been incorporated with $125,000 capital stock by W. J. Maloney, H. G. Hartman and A. F. Covert. The company is represented by C. W. Kappenberg.

LOCKPORT, N. Y.—The A. W. Jack Corp., maker of asbestos products, plans a plant building at a cost of $350,000.

NEW YORK—C. O'Laughlin Co., motion picture lighting machines, has been incorporated by C. D. O'Laughlin, C. J. Long and J. P. Hackett. The company is represented by Seelaw, Cohen & Brandt, 156 Park Row.

NEW YORK—The Minerva Metal & Novelty Co. has been incorporated with $50,000 capital stock by B. Moses, A. Corey and D. Schneer. The company is represented by E. Morganlander, 1540 Broadway.

NEW YORK.—The Silvirite Metal Corp. has been incorporated with $20,000 capital stock by W. G. Milner, M. Selwitz and others. The company is represented by A. B. Hano, 1123 Broadway.

NEW YORK.—The Vernart Radio Equipment Corp. has been incorporated with $25,000 capital stock by R. V. Colton, H. and A. Schwerin. The company is represented by E. F. Spitz, 141 Broadway.

NEW YORK—The Oidar Radio Mfg. Corp. has been incorporated with $10,000 capital stock by B. Weilheimer, R. Rosner and R. Rochow. The company is represented by M. B. Gluck, 97 Warren street.

NEW YORK.—Ashlund, Fager & Weiterer, sheet metal and fireproof windows, have been incorporated with $50,000 capital stock by J. A. Fager, G. Weiterer and C. Ashlund. The company is represented by Groeh & Weiss, 233 Broadway.

OGDENSBURG, N. Y.—The St. Lawrence Boat Works has increased its capital stock from $25,000 to $75,000.

ONEIDA, N. Y.—The Maxwell Steel Vault Co., 4 Warner street, plans a plant unit, 1-story, 60 x 90 feet.

POUGHKEEPSIE, N. Y.—The general contract for a $100,000 foundry has been awarded by the Advance Boiler Co. The structure will be one story, 100 x 300 feet.

SYRACUSE, N. Y.—The Topp Appliance Co. has been incorporated with $10,000 capital stock by M. J. Topp, A. R. Hammerle and W. C. Clark. The company is represented by E. M. Deming.

TROY, N. Y.—The Bossard Railway Signal Corp. has increased its capital stock from $150,000 to $500,000.

WAYNESVILLE, N. C.—The Natural Abrasive Mining Co. of America plans a grinding mill and operating plant at Willets, N. C., to cost about $100,000. Frank R. Hewitt is treasurer of the company.

WILSON, N. C.—Hackney Bros., manufacturer of automobile bodies, plans a 1-story plant building, 80 x 300 feet.

AKRON, O.—Gear & Parts Co. has been incorporated with $2400 capital stock by Henry Cossell, Albert S. Meeker, and others.

CLEVELAND—The Coin Clock Co. has been incorporated with $500 capital stock by Ira H. Crum, Herman R. Tingley, and others.

CLEVELAND—The Euclid Auto Body Repair Co. has been incorporated with $5000 capital stock by David Miller, S. A. Goldstein, Harry Laserman, M. Paleysky and S. Horwitz.

LOGAN, O.—The Logan Foundry & Machine Co. plans a building for the manufacture of oil well supplies.

MARION, O.—The Murdock Dishwashing Machinery Co. has been incorporated with $250,000 capital stock by Parmly H. Ryder, Hugh A. McKinnon, Elmer B. Fidler and Fred B. Scherff.

TOLEDO, O.—The Libbey-Owens Sheet Glass Co., Nicholas building, plans a 1-story addition to its power house, 65 x 75 feet.

WARREN, O.—The Alloy Electric Steel Casting Corp. will start work, May 1, on the first unit of its plant which will be 110 x 280 feet.

ALLENTOWN, PA.—The Self-Change Making Drawer Co., manufacturer of automatic drawers for cash registers, etc., is establishing a plant here. The company is capitalized at $100,000.

West of the Mississippi River

LOS ANGELES—The W. H. Cain Gas Radiator Co., Moneta avenue, plans a 2-story factory building, 50 x 140 feet.

LOS ANGELES—The Southern California Metal & Leather Co., 2300 East Eleventh street, maker of metal products, plans to rebuild the part of its plant which was recently damaged by fire.

KANSAS CITY, MO.—G. F. Williams, 2416 East Twelfth street, plans a 1-story machine shop, 50 x 132 feet.

WELEETKA, OKLA.—Croft-Riley Co., machinery, has been incorporated with $100,000 capital stock by E. L. Croft and H. E. Riley and others. The company will establish a machine shop.

PORTLAND, OREG.—The Clackamas County Auto & Tractor Co.'s plant recently was damaged by fire. The loss was estimated at $80,000

GALVESTON, TEX.—The Vulcan Iron Works has been incorporated with $100,000 capital stock, by Ben Sass, Joseph Bader and William J. Cain.

HUTTO, TEX.—Hanstrom & Tinning plan to rebuild their electric light and power plant recently damaged by fire.

WACO, TEX.—The Monroe Clipper Co. has been incorporated with $100,000 capital stock by Collier Monroe and others, to manufacture hair clippers, etc.

HOQUIAM, WASH.—The Federal Power Co. plans the construction of a steam power plant at an estimated cost of $250,000.

SEATTLE—The Hopper Cannery Machinery Co. has been incorporated with $50,000 capital stock by Alfred E. Hodgson, 543 New York building, E. W. Hopper and Craig Miller.

SHELTON, WASH.—The Peninsular Railway Co. plans a machine shop.

SPOKANE, WASH.—The Schoonover Engine Co. has been incorporated with $1,000,000 capital stock to engage in the manufacture of engines. The company is represented by Munter & Munter.

Business in Canada

CARP, ONT.—The Airflex Fuel Mixer & Mfg. Co., has been incorporated with $20,000 capital stock by William R. Stokes, K. Stokes and Maurice Caron.

HAMILTON, ONT.—The Hamilton Iceless Refrigerator Co., Ltd., has been incorporated with $40,000 capital stock to manufacture refrigerators, etc., by John Pentland, David Horne and Clayton S. Alyea.

ROCKLAND, ONT.—La Compagnie Electrique de Rockland, Ltd., has been incorporated with $100,000 capital stock by Andrew T. Thompson, Louis Cobe and Thomas A. Burgess.

TORONTO, ONT.—The Overall Tire Co., Ltd., has been incorporated with $50,000 capital stock to manufacture tires, etc., by Harry Van Norman, Walter R. Pike and Edgar B. Jones.

LACHINE, QUE.—This city plans a transmission plant as a distribution center for electric power.

MONTREAL, QUE.—The Perfection Radiator Co., Ltd., has been incorporated to manufacture radiators, etc., with $100,000 capital stock by Joesph A. Marion, Louis J. Pouliot and others.

SHERBROOKE, QUE.—Manganese & Steel Foundry, Ltd., has been incorporated with $25,000 capital stock by Frederick S. Rugg, Charles de da Broquerie Mignault and C. S. Wiggett.

The Man on the Truck Says:

"If this truck ran on rails it couldn't find a smoother surface than this KREODONE WOOD BLOCK FLOOR. No chuck holes—no bumps. Whiz around everywhere without shaking stuff off. Smoother than that forty-year-old stuff the bird on the corner use to sell. I can always tell when I'm on a KREODONE floor—the stuff in other wood blocks oozes out, gums the wheels; nothing like that when the floor's KREODONE. And wear! It was here when we fought the Filipinos; it was here when I went across the pond—and here it is today, good as ever, the same old die-hard."

REASON: *High quality timber treated only with pure, unadulterated, stay-there creosote oil.*

We also make an *improved* grove block. Write and let us show you its economic advantages.

REPUBLIC CREOSOTING COMPANY

Original Makers of Wood Block Floors

Indianapolis, Ind.

KREODONE WOOD BLOCK FLOORS

Plants: Indianapolis Minneapolis Mobile Seattle Norfolk

Erie County Bank Bldg., Buffalo
152 Bay Street, Toronto, Canada
516 Beacon Bldg., Boston
Berkley Ward, Norfolk
222 Society for Savings Bldg., Cleveland

BRANCHES

St. Louis Park, Minneapolis
317 Hammond Street, Cincinnati
August Court Co., Agents,
419 Chemical Building, St. Louis

Builders Specialty Co., Omaha
834 Real Estate Trust Bldg., Philadelphia
445 Central Bldg., Seattle
Masonic Temple, Mobile
211 Hamond Bldg., Detroit

European Iron and Steel Statistics

Gross Tons

Production

Pig Iron

	United Kingdom	France	Belgium	Luxemburg
Monthly average 1912..	729,000	405,000	192,000	184,800
Monthly average 1913..	855,000	427,000	203,800	209,000
Monthly average 1919..	617,000	198,000	20,600	50,000
Monthly average 1920..	667,300	281,700	92,700	58,000
1921				
January	642,100	288,000	110,600	93,500
February	463,600	287,400	103,700	81,700
March	386,000	295,300	104,700	27,600
April	60,300	287,700	94,700	70,800
May	13,600	278,100	74,600	78,700
June	800	280,900	67,400	81,700
July	10,200	262,400	44,600	70,000
August	94,200	250,800	43,800	72,800
September	158,300	239,800	39,800	86,200
October	235,500	251,800	45,800	98,800
November	271,800	290,000	59,800	92,400
December	275,000	296,300	73,000	100,800
Total for 1921	2,611,400	3,308,500	862,500	955,000
1922				
January	288,000	307,000	92,700	99,900

Ingots and Castings

	United Kingdom	France	Belgium	Luxemburg
Monthly average 1912..	566,000	363,000	206,000	79,400
Monthly average 1913..	639,000	385,000	202,300	109,000
Monthly average 1919..	658,000	179,000	27,400	32,000
Monthly average 1920..	754,700	250,200	101,300	49,000
1921				
January	493,400	263,700	119,100	70,800
February	483,500	259,600	98,400	62,000
March	359,100	246,900	96,300	19,700
April	70,600	252,600	108,700	57,100
May	5,700	240,400	62,800	56,100
June	2,700	240,800	54,200	61,000
July	117,200	219,500	26,900	57,100
August	434,100	228,600	27,800	55,100
September	429,300	232,100	34,000	76,200
October	405,400	255,900	41,900	81,800
November	443,800	272,700	46,200	69,900
December	381,000	297,600	63,200	80,700
Total for 1921	3,625,800	3,010,400	779,500	747,500
1922				
January	327,500	309,000	78,400	75,600

Foreign Trade

Imports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	166,400	16,400	87,000	27,300
Average monthly 1913..	185,900	12,900	68,900	25,000
Average monthly 1919..	42,400	113,100	44,400	.....
Average monthly 1920..	92,400	89,000	67,000	26,200
1921				
January	157,800	44,200		
February	153,400	35,400	120,100	125,000*
March	156,100	33,900		
April	102,100	26,100		
May	81,900	31,700	95,500	36,000
June	84,500	20,700		42,100
July	103,600	30,300		45,100
August	141,500	16,100	130,600	61,200
September	206,100	27,900		79,800
October	172,800	19,800		96,600
November	169,200	20,700	168,000	54,300
December	117,000	.....		56,300
Total for 1921	1,646,000	.....	514,200	596,400*
1922				
January	88,700	.....	.....	.....

Exports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	400,600	41,500	124,500	482,400
Average monthly 1913..	414,100	48,200	128,800	516,900
Average monthly 1919..	186,100	19,400	14,500	.....
Average monthly 1920..	271,100	74,600	74,300	143,600
1921				
January	232,400	89,300		
February	166,900	125,800	294,000	503,600*
March	148,900	122,700		
April	160,100	117,400		.....
May	99,000	96,900	241,300	127,800
June	64,700	109,100		159,700
July	64,000	87,600		175,000
August	76,500	122,500	192,300	236,300
September	133,300	171,200		221,800
October	155,800	188,300		242,300
November	193,500	167,400	176,000	230,600
December	205,300	.....		212,900
Total for 1921	1,700,400	903,600	.....	2,110,000*
1922				
January	253,300	.....	.....	.....

*Provisional estimate owing to absence of German figures for first four months of 1921.

American Iron and Steel Exports and Imports

Gross Tons

	Imports	Exports
1922		
February	10,216	133,333
January	10,511	155,822
1921		
December	9,400	134,348
November	9,296	125,492
October	10,609	106,466
September	11,743	94,650
August	8,069	75,641
July	10,040	85,529
June	8,260	119,021
May	23,316	142,553
April	4,935	162,793
March	4,505	230,253
February	3,672	394,638
January	15,784	516,447
Total	119,629	2,187,822
1920		
December	15,120	499,780
November	50,995	434,290
October	39,797	451,972
September	31,825	408,605
August	58,335	431,519
July	32,742	419,230
June	40,549	392,780
May	29,125	419,064
April	29,681	395,583
March	38,377	426,448
February	36,491	308,128
January	45,796	333,514
Total	448,833	4,920,913

	Imports	Exports
1919		
December	39,806	254,780
November	43,826	336,994
October	40,698	302,459
September	43,567	363,531
August	28,987	396,743
July	28,258	287,685
June	21,056	561,020
May	17,885	422,282
April	16,560	396,813
March	17,632	367,224
February	12,302	344,180
January	16,913	371,579
Total	327,490	4,405,281
1918		
December	28,996	356,641
November	11,582	471,427
October	15,744	426,767
September	8,440	473,688
August	12,520	512,104
July	11,511	452,759
June	13,913	418,605
May	14,387	488,515
April	11,371	462,887
March	14,345	379,924
February	12,941	438,848
January	12,475	490,259
Total	168,225	5,372,424

	Imports	Exports
1917		
December	14,642	653,344
November	13,995	473,549
October	14,310	571,868
September	19,058	499,067
August	26,129	503,075
July	28,859	346,393
June	29,080	629,305
May	26,479	582,303
April	48,213	519,397
March	37,943	606,559
February	24,947	449,099
January	40,910	608,281
Total	324,565	6,442,240
1916	310,891	5,947,646
1915	282,396	3,532,564
1914	289,775	1,549,554
1913	317,260	2,745,635
1912	225,072	2,947,596
1911	262,457	2,187,725
1910	510,730	1,537,943
1909	363,984	1,243,583
1908	205,845	964,242
1907	662,358	1,301,981
1906	577,809	1,325,740
1905	416,000	1,010,255
1904	266,398	1,167,674
1903	1,178,797	326,590
1902	1,212,484	411,915
1901	221,297	81,211
1900	209,955	286,687

The Daily Record, Glasgow, is the leading morning paper in the west of Scotland. "The all-Scotland newspaper. Sales three times that of any other morning paper". The simple explanation is that the Record is extremely interesting from first page to last—even to American readers.

AMERICAN IRON TRADE

WORLD'S PRODUCTION OF STEEL

A cablegram received yesterday from the "Iron Trade Review," Cleveland, Ohio, U S. A., states:—

"World's iron output past year estimated 38,810,000 tons; steel, 40,731,000, believed will never again be so low.

"American output of iron, 16,670,000; steel, 20,500,000; December output, 1,611,000; gain of 219,000. American exports lowest for ten years, about 2,200,000; imports, 125,000.

"In composite market, fourteen products fell during year from 54 dollars to 34 dollars, about 37 per cent. Market quiet.

"Prospects New Year more favourable; growing confidence buyers and sellers. December, shipments generally heavier.

"Several tinplate mills running 100 per cent., others 90 per cent. Recent structural shipments largest for eighteen months. Increasing interest first quarter delivery.

"Plate inquiries for car and oil tank requirements involve substantial tonnages."

400 Newspapers Regularly Quote

THE IRON TRADE REVIEW

CLEVELAND

The international reputation and the World-wide circulation of THE IRON TRADE REVIEW is the result of year after year of unfailing Editorial accuracy and reliability.

PROOF—

THE IRON TRADE REVIEW

"The Most Widely Quoted Trade Paper In The World"

New Trade Publications

DERRICKS—The Marion Machine, Foundry & Supply Co., Marion, Ind., has published an 8-page illustrated booklet in which steel derricks are described and illustrated. These derricks are quickly and easily erected. Complete specifications are given.

WIRE PRODUCTS—The Reliance Iron & Wire Works Co., Denver, Colo., is circulating a large illustrated folder in which its various wire products are described and illustrated. These include fencing, desk railings, skylight guards, benches, gates, window guards, etc.

RECORDING EQUIPMENT—The Uehling Instrument Co., Paterson, N. J., is circulating a new illustrated booklet of 12 pages in which recording equipment for guiding the engineer and fireman in reducing the waste of fuel is described. The equipment is described in detail. Particular attention is called to a recently developed filter which it is claimed is efficient in keeping the gas sampling lines clean. Other features include the separate recorder for the engineer's office, and indicator for the boiler front, continuous chart record and the dry method of absorption.

DRILLING EQUIPMENT—The Marion Machine, Foundry & Supply Co., Marion, Ind., is circulating a 4-page illustrated leaflet in which steel drilling equipment is described and illustrated. This includes steel bull wheels, steel band wheels and steel tug rims. Specifications, etc., are given.

REDUCING VALVES—The Atlas Valve Co., Newark, N. J., has published a new handbook in which the economics of reducing valves is fully covered. The book goes into careful and complete detail on all points closely related to reducing valves. The flow of steam through pipes is handled in a simple and understandable manner, charts and formulas being avoided. Other features include data on superheated steam, extra heavy pipe, pipe fittings, leaders to heating systems, pipe friction allowances, steam velocities, etc.

MARINE ARCHITECTURE—C. V. S. Wyckoff, New York, has published a 4-page bulletin in which marine architecture and engineering is discussed. According to the bulletin the system as outlined is a correlation in one unit of approved principles of marine architecture and engineering.

RECORDING EQUIPMENT—The Esterline-Angus Co., Indianapolis, has published a 4-page illustrated bulletin in which electrical recording apparatus is described and illustrated. A concentration meter, kilovolt ampere meter, voltage recorder, portable graphic meter, multi-range current transformer, switchboard recorder, power factor meter, wall-type graphic meter, etc., are among the instruments described.

Industrial Business Changes Recently Announced

WITH headquarters in Findlay, O., Col. Lloyd E. Jennings on May 1 takes over the sales agency of the American Saw & Mfg. Co., Springfield, Mass., for Ohio Illinois, Kentucky, Missouri Tennessee, Indiana Michigan and western Pennsylvania.

* * *

Eastern offices of the Thomas Spacing Machine Co., Pittsburgh, have been moved from 57 Transportation building, Philadelphia, to 714 Commercial Trust building, that city. G. L. Bohannon is eastern representative.

* * *

Succeeding the John Obenberger Forge Co., Milwaukee, bankrupt, the Obenberger Forge Co. has been organized.

* * *

Real estate and holdings of the Weigle Machine Tool Co., Peru, Ind., have been bought by the Bryan Harvester Co., that city.

* * *

The Van Dyke Churchill Co., machinery dealer, has moved from 149 Broadway to 52 Vesey street, New York.

* * *

The National Pump & Mfg. Co., York, Pa., has bought the factory of the Arbentz Motor Co., Chillicothe, O.

* * *

Offices have been opened at 2225 Third street, Milwaukee, by Adelbert Forsyth as representative of the Cakal Stoker Corp., the Frost Mfg. Co. and the Jointless Fire Brick Co., all of Chicago.

* * *

The F. Rosenberg Elevator Co., Milwaukee, is moving from 174-178 Reed street to 1645 Richards street.

* * *

The Gillespie Eden Corp., Lowell, Mass., builder of electric washing machines, is planning to move its plant to Paterson, N. J.

* * *

William K. Stamets, machines and machinery, has moved his office from the Hickox building, Cleveland, to 976 Kirby building, that city.

* * *

The Janke Automobile & Machine Co., Tomah, Wis., and the Tomah Iron Works have merged as the Tomah Iron Works & Garage.

* * *

S. W. Platt & Co., scrap iron dealers, have moved their headquarters from the sixth floor First National Bank building, Pittsburgh, to 812-813-814 that building.

* * *

Opening a branch office in the American National Bank building, San Francisco, the Davis Welding & Mfg. Co., Cincinnati, has established Pacific coast headquarters there with C. F. Chambers, manager for that territory, in charge.

* * *

New quarters have been taken at 1213 Pine street, St. Louis, by the Bernard E. Mohr Machinery Co., formerly located on Easton avenue, St. Louis.

* * *

Separation of the power and railway division of the Pittsburgh office of the Westinghouse Electric & Mfg. Co., into the power division and the railway division, is announced.

* * *

The Detroit Seamless Tubes Co. has established its own branch sales office in New York, in the Canadian Pacific building, 342 Madison avenue. H. C. Kensing has been made district sales manager for the New York territory.

* * *

Plant and equipment of the Accurate Machine Co., Cleveland, have been purchased by the Sterling-Knight Motor Co.

* * *

The Electric Furnace Co. has removed its sales and executive offices from Alliance to Salem, O. All of the departments of this company now are consolidated at the works, Wilson street and Pennsylvania railroad, Salem.

* * *

The Lyons Level & Tool Co., New Haven, Conn., has changed its name to the Lyons Mfg. Co.

PARISH & BINGHAM

Substitute Pressed Steel

for Castings wherever possible—because

PRESSED STEEL PARTS

ARE Uniform in shape and weight—
Stronger and lighter than castings—
Less brittle—will not break under shocks or strains—
Tougher than castings—
Delivered finished—no machining necessary
Rapidly produced—
Lower in cost.

Parish and Bingham Engineers are specialists in designing suitable substitutions, and in producing heavy gauge pressed products.

May we help you?

Following, as indicated by number, are the main buildings of our plant:

1—Main Office building;

2—Factory Building, 900 ft. long, 200 ft. wide;

3—Factory Building, 750 ft long, 140 ft. wide;

4—Heat Treating and Annealing Building, floor space 22,400 sq. ft.

This building also contains a chemical laboratory in which all steel is inspected before being unloaded from cars

5—Power House;

6—For storing steel sheets and dies. Out machine shop and tool room also located here

Parish & Bingham Corporation

Builders of Automobile Frames and Steel Stampings

CLEVELAND, OHIO

P&B

Iron and Steel Production

Compiled By THE IRON TRADE REVIEW

Pig Iron

	Stacks No.	Stacks In	Output Total	Output Av. daily
1907				
January	376	311	2,174,801	69,509
February	374	308	2,047,036	73,109
March	377	304	2,186,709	70,539
April	378	327	2,226,708	74,223
May	391	329	2,291,030	73,904
June	392	341	2,237,420	74,580
July	396	335	2,253,243	72,685
August	397	329	2,243,656	72,376
September	399	329	2,174,148	72,471
October	401	314	2,359,690	76,119
November	398	226	1,820,558	60,685
December	398	154	1,234,733	39,830
Total			25,299,732	
1908				
January	398	139	1,081,813	34,316
February	401	150	1,086,809	37,476
March	398	154	1,229,856	39,672
April	398	146	1,155,122	38,504
May	396	145	1,168,002	37,677
June	395	154	1,106,300	36,876
July	397	166	1,228,604	39,632
August	399	181	1,366,019	44,065
September	399	189	1,416,252	47,208
October	400	200	1,573,824	50,764
November	402	212	1,582,314	52,744
December	403	221	1,723,664	55,602
Total			15,680,140	
1909				
January	406	234	1,787,473	57,683
February	407	233	1,682,470	60,088
March	406	229	1,822,024	58,793
April	406	224	1,731,406	57,687
May	407	236	1,866,757	60,218
June	408	240	1,929,929	64,331
July	409	258	2,088,620	67,375
August	412	278	2,232,642	72,021
September	413	297	2,378,655	79,186
October	413	309	2,589,681	84,001
November	414	311	2,532,740	84,425
December	416	314	2,682,702	86,539
Total			25,337,002	
1910				
January	416	311	2,599,995	83,871
February	417	311	2,429,525	86,747
March	417	310	2,588,736	83,580
April	418	291	2,477,700	82,590
May	421	206	1,871,388	60,367
June	420	271	2,288,279	76,276
July	420	254	2,158,124	69,617
August	422	244	2,103,793	67,864
September	420	234	2,048,461	68,282
October	421	230	2,086,205	67,297
November	421	218	1,910,385	63,679
December	421	193	1,779,899	57,192
Total			26,840,314	
1911				
January	421	210	1,766,658	56,985
February	421	226	1,781,285	63,617
March	421	236	2,165,764	69,867
April	421	220	2,044,904	68,163
May	421	206	1,871,388	60,367
June	421	202	1,773,282	59,109
July	423	196	1,776,108	57,294
August	423	206	1,921,832	61,995
September	423	216	1,973,918	65,797
October	421	214	2,092,061	67,486
November	421	214	1,999,100	66,637
December	422	215	2,032,301	65,558
Total			23,198,601	
1912				
January	421	227	2,052,806	66,220
February	422	235	2,098,796	72,372
March	420	237	2,411,529	77,791
April	421	239	2,377,621	79,254
May	423	243	2,503,341	80,753
June	424	242	2,433,737	81,125
July	422	245	2,402,567	77,502
August	423	255	2,500,163	80,650
September	419	262	2,444,454	81,482
October	422	280	2,683,645	86,569
November	423	289	2,639,562	87,985
December	423	291	2,777,292	89,590
Total			29,325,513	
1913				
January	423	297	2,287,800	89,929
February	423	306	2,778,670	92,095
March	423	278	2,562,823	89,123
April	421	297	2,754,353	91,812
May	421	285	2,716,825	90,865
June	422	283	2,816,883	87,229
July	422	264	2,658,275	82,525
August	424	260	2,537,018	81,839
September	425	258	2,594,098	83,137
October	425	244	2,439,924	81,933
November	424	225	2,529,960	74,322
December	424	191	1,976,138	63,746
Total			30,652,767	
1914				
January	423	199	1,879,336	60,624
February	423	219	1,888,607	67,450
March	423	232	2,341,551	75,534
April	422	212	2,261,501	75,383
May	422	198	2,097,019	67,646
June	422	193	1,904,566	63,486
July	422	187	1,955,324	63,075
August	422	187	1,996,483	64,403
September	422	180	1,882,718	62,757
October	422	162	1,767,227	57,007
November	421	150	1,501,269	50,042
December	421	154	1,495,325	48,236
Total			22,970,926	
1915				
January	421	165	1,591,324	51,323
February	421	179	1,666,592	59,521
March	421	190	2,046,280	66,009
April	421	197	2,114,518	70,484
May	421	207	2,255,157	72,747
June	421	221	2,369,932	78,998
July	421	234	2,563,311	82,687
August	421	246	2,774,825	89,510
September	420	266	2,834,342	94,478
October	420	276	3,120,340	100,656
November	421	285	3,035,235	101,174
December	421	295	3,201,605	103,278
Total			29,573,161	
1916				
January	421	304	3,171,878	102,319
February	421	312	3,078,548	106,157
March	422	315	3,327,630	107,343
April	422	320	3,225,496	107,517
May	423	321	3,364,584	108,535
June	423	325	3,213,818	107,127
July	419	316	3,221,127	103,907
August	419	317	3,197,838	103,156
September	419	326	3,208,041	106,935
October	419	328	3,508,180	113,167
November	420	322	3,317,805	110,593
December	422	309	3,184,178	102,715
Total			39,019,123	
1917				
January	422	310	3,159,839	101,930
February	422	317	2,649,935	94,641
March	423	331	3,255,813	105,026
April	425	333	3,328,061	110,936
May	425	340	3,413,677	110,119
June	427	347	3,260,234	108,675
July	429	351	3,337,442	107,659
August	431	355	3,238,970	104,483
September	431	344	3,140,742	104,691
October	433	334	3,296,286	106,332
November	434	344	3,198,597	106,620
December	435	321	2,885,380	93,077
Total			38,164,976	
1918				
January	435	294	2,403,227	77,523
February	435	319	2,318,242	82,794
March	438	338	3,209,996	103,548
April	437	351	3,273,355	109,112
May	437	360	3,451,884	111,351
June	437	353	3,316,148	110,538
July	437	364	3,408,584	109,954
August	439	371	3,378,479	108,983
September	438	364	3,413,223	113,774
October	437	364	3,482,392	112,335
November	437	360	3,347,844	111,595
December	435	351	3,434,114	110,602
Total			38,437,488	
1919				
January	435	330	3,306,279	106,654
February	435	311	2,943,347	105,270
March	435	279	3,088,023	99,614
April	435	216	2,474,374	82,479
May	433	197	2,107,729	67,991
June	433	199	2,114,028	70,467
July	434	240	2,424,212	78,200
August	432	266	2,742,081	88,453
September	433	163	2,480,790	82,692
October	432	216	1,864,424	60,142
November	432	252	2,407,369	80,244
December	432	262	2,626,074	84,711
Total			30,578,730	
1920				
January	432	285	3,012,373	97,172
February	432	305	2,984,257	102,904
March	433	315	3,375,768	108,895
April	433	278	2,752,670	91,754
May	433	297	2,991,825	96,510
June	433	302	3,046,623	101,553
July	434	291	3,043,918	98,190
August	434	306	3,145,536	101,168
September	434	317	3,124,308	104,143
October	435	290	3,288,341	106,075
November	435	255	2,935,081	97,836
December	435	202	2,700,268	87,105
Total			36,400,968	
1921				
January	436	184	2,414,753	77,895
February	436	155	1,927,088	68,906
March	436	103	1,593,542	51,447
April	436	96	1,190,751	39,691
May	436	90	1,215,272	39,202
June	436	74	1,064,007	35,466
July	435	69	864,642	27,892
August	435	69	954,901	30,802
September	435	84	985,795	32,857
October	435	95	1,234,450	39,821
November	429	120	1,414,958	47,165
December	429	123	1,642,775	52,992
Total			16,506,564	
1922				
January	430	127	1,545,804	53,090
February	429	139	1,630,180	58,220
March	429	155	2,034,784	65,638

Lake Ore Shipments

Gross Tons, Rail and Water

1921	22,798,349
1920	60,411,572

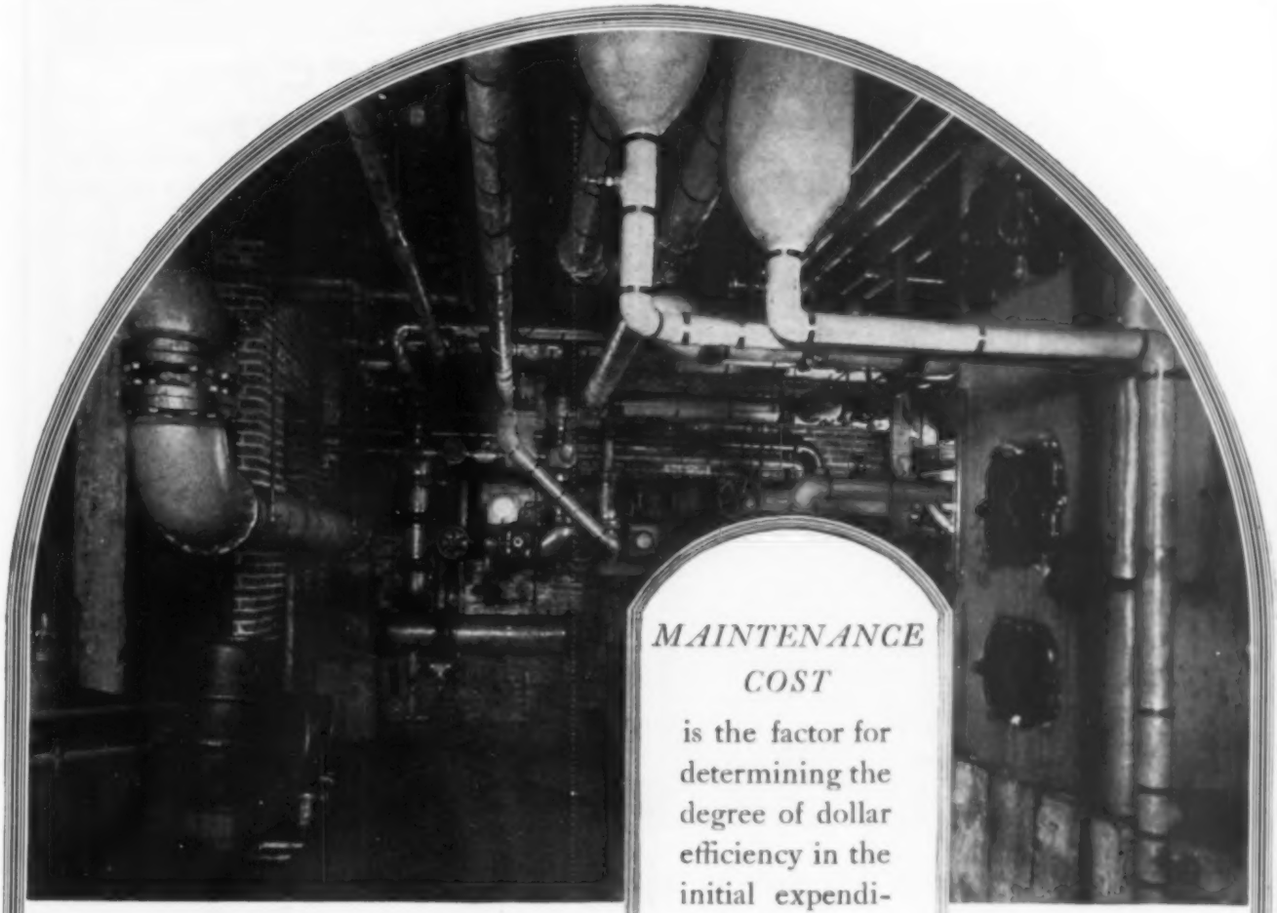
Ingots and Castings

By American Iron and Steel Institute

	Ingots	Castings	Total
1910	25,154,087	940,832	26,094,919
1911	23,029,479	646,627	23,676,106
1912	30,284,682	966,621	31,251,303
1913	30,280,130	1,020,744	31,300,874
1914	22,819,784	693,246	23,513,030
1915	31,284,212	866,824	32,151,036
1916	41,401,917	1,371,763	42,773,680
1917	43,619,200	1,441,407	45,060,607
1918	43,051,022	1,411,410	44,462,432
1919	33,694,795	976,437	34,671,232
1920	40,881,392	1,251,542	42,132,934

Monthly Ingot Output

	Gross Tons 84.2 per cent of capacity	Indicated total
1921		
January	2,203,186	2,620,000
February	1,749,477	2,080,000
March	1,570,978	1,860,000
April	1,213,958	1,440,000
May	1,265,850	1,500,000
June	1,003,406	1,190,000
July	803,376	955,000
August	1,138,071	1,350,000
September	1,174,740	1,400,000
October	1,616,810	1,900,000
November	1,668,001	1,970,000
December	1,427,093	1,680,000
Total	16,826,946	19,945,000
1922		
January	1,593,482	1,890,000
February	1,745,022	2,075,000
March	2,370,751	2,820,000



MAINTENANCE COST

is the factor for determining the degree of dollar efficiency in the initial expenditure.

CRANE
Power Plant Equipment

is constructed of material that is reliable because of its strength and correct design; and when properly installed makes a system having long life and low maintenance cost.

We are manufacturers of about 20,000 articles, including valves, pipe fittings and steam specialties, made of brass, iron, ferrosteel, cast steel and forged steel, in all sizes, for all pressures and all purposes, and are distributors through the trade, of pipe, heating and plumbing materials.

SALES OFFICES, WAREHOUSES AND SHOWROOMS:

BOSTON, SPRINGFIELD, HARTFORD, BRIDGEPORT, ROCHESTER, NEW YORK, HARLEM, ALBANY, BROOKLYN, PHILADELPHIA, READING, ATLANTIC CITY, NEWARK, CAMDEN, BALTIMORE, WASHINGTON, SYRACUSE, BUFFALO, SAVANNAH, ATLANTA, KNOXVILLE, BIRMINGHAM, MEMPHIS, LITTLE ROCK, MUSKOGEE, TULSA, OKLAHOMA CITY, WICHITA, ST. LOUIS, KANSAS CITY, TERRE HAUTE, CINCINNATI

CRANE LIMITED — MONTREAL, TORONTO, VANCOUVER, WINNIPEG, CALGARY, REGINA, HALIFAX, OTTAWA.

FOUNDED BY R. T. CRANE, 1855

CRANE CO.

836 S. MICHIGAN AVE.

CHICAGO

WORKS: CHICAGO AND BRIDGEPORT

INDIANAPOLIS, DETROIT, CHICAGO, ROCKFORD, OSHKOSH, GRAND RAPIDS, DAVENPORT, DES MOINES, OMAHA, SIOUX CITY, MANKATO, ST. PAUL, MINNEAPOLIS, WINONA, DULUTH, FARGO, WATERTOWN, ABERDEEN, GREAT FALLS, BILLINGS, SPOKANE, SEATTLE, TACOMA, PORTLAND, POCATELLO, SALT LAKE CITY, OGDEN, RENO, SACRAMENTO, OAKLAND, SAN FRANCISCO, LOS ANGELES

CRANE-BENNETT, LTD. LONDON, ENG

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron	$6.45
Mesabi Bessemer, 55 per cent iron	6.20
Old Range nonbessemer, 51½ per cent iron	5.70
Mesabi nonbessemer, 51½ per cent iron	5.55

PORT HENRY IRON ORE

Per Gross Ton, F.o.b., Port Henry

Old bed 21 furnace	$4.85
Old bed concentrates, 63 per cent	5.75
Harmony, cobbed, 63 per cent	5.75
New bed, low phos., 65 per cent	8.50
Lump ore for fix	6.00

Manganese Ore

Brazilian, 48 to 50 per cent c.i.f. Atlantic ports, 25½ cents per unit.

Indian 48 to 50 per cent c.i.f. Atlantic ports, 25½ cents per unit.

Fluor Spar

Washed gravel Kentucky and Illinois mines, per ton $16.00 to 17.50

Rivets

Structural rivets	2.00c to 2.25c
Boiler rivets, Pittsburgh	2.10c to 2.35c
Rivets ⅞-in. and smaller, Pittsburgh	70-10 and 5 to 70-10-10 off

Nuts and Bolts

NUTS

(Up to 1¼ and 1⅛ inches inclusive)

Hot pressed, square blank	$5.50 off
Hot pressed, square tapped	5.00 off
Hot pressed, hexagon blank	5.50 off
Hot pressed, hexagon tapped	5.00 off
Cold pressed, square tapped	5.00 off
Cold pressed, square blank	5.25 off
Cold pressed, hexagon tapped	5.00 off
Cold pressed, hexagon blank	5.25 off
Cold pressed semifinished hexagon nuts ⅝-in. and larger	70-10-10 off
Cold pressed semifinished hexagon nuts ⅞-inch and smaller	70-10-10-10 off
Case hardened, finished, hexagon	75-70½ off

Price f.o.f. Pittsburgh, Packages of 50.

CARRIAGE BOLTS

⅜ x 6 inches, smaller and shorter

Rolled thread	65-10-10 off
Cut thread	65-10 to 70 off
Larger and longer	65-10 to 70 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	70-10-5 to 70-10-7½ off
Cut thread	70-5 to 70-10 off
Larger and longer	65-10-5 to 70-10 off

(⅜ x 4 inches, cold punched nuts)

Cut thread	65-5 off
Larger and longer	65 off
Lag screws	70-10 to 70-10-5 off
Plow bolts Nos. 1, 2 and 3 heads	60-10 off

Warehouse Prices

STEEL BARS

Boston	2.405c
Buffalo	2.45c
Chicago	2.28c
Cincinnati	2.35c to 2.60c
Cleveland	2.21c
Detroit	2.33c
New York	2.38c to 2.53c
Philadelphia	2.36c
San Francisco	3.25c
Seattle	3.25c
St. Louis	2.375c
St. Paul	3.06c
Los Angeles	3.10c

IRON BARS

Boston	2.405c
Buffalo	2.45c
Chicago	2.28c
Cincinnati	2.35c to 2.60c
Detroit	2.33c
New York	2.38c
Philadelphia	2.36c
St. Louis	2.375c

SHAPES

Boston	2.505c
Buffalo	2.55c
Chicago	2.38c
Cincinnati	2.45c to 2.70c
Cleveland	2.31c
Detroit	2.43c
New York	2.48c to 2.63c
Philadelphia	2.46c
San Francisco	3.25c
Seattle (under 3-inch)	3.25c
St. Louis	2.475c
St. Paul	3.06c
Los Angeles	3.20c

PLATES

Boston	2.505c
Buffalo	2.55c
Chicago	2.38c
Cincinnati	2.45c to 2.70c
Cleveland	2.31c
Detroit	2.58c
New York	2.48c to 2.63c
Philadelphia	2.46c
San Francisco	3.25c
Seattle	3.25c
St. Louis	2.475c
St. Paul	3.06c
Los Angeles	3.50c

NO. 10 BLUE ANNEALED SHEETS

Boston	3.305c to 3.48c
Buffalo	3.40c
Chicago	3.38c
Cincinnati	2.25c
Cleveland	3.06c to 3.10c
Detroit	3.33c
New York	3.28c
Philadelphia	3.25c
San Francisco	4.10c
Seattle	4.50c
St. Louis	3.475c
St. Paul	3.66c
Los Angeles	4.50c

NO. 28 BLACK SHEETS

Boston	4.50c
Buffalo	4.25c
Chicago	4.15c
Cincinnati	4.50c
Cleveland	3.75c
Detroit	4.08c
New York	3.90c to 4.25c
Philadelphia	4.00c
San Francisco	5.60c
Seattle	5.50c
St. Louis	4.15c
St. Paul	4.43c
Los Angeles	5.60c

NO. 28 GALVANIZED SHEETS

Boston	5.50c
Buffalo	5.25c
Chicago	5.15c
Cincinnati	4.75c
Cleveland	4.75c
Detroit	5.08c
New York	4.90c to 5.25c
Philadelphia	5.00c
San Francisco	6.45c
Seattle	6.50c
St. Louis	5.15c
Los Angeles	6.45c

BANDS

Boston	2.905c
Buffalo	3.05c
Chicago	3.13c
Cincinnati	2.25c to 2.30c
Cleveland	2.71c
Detroit	2.93c
New York	2.98c to 3.13c
Philadelphia	2.86c
San Francisco	3.90c
Seattle	3.75c
Los Angeles	4.00c

HOOPS

Boston	3.315c
Buffalo	3.15c
Cleveland	2.71c
Detroit	3.08c
New York	3.13c to 3.33c
Philadelphia	3.11c
Seattle	4.50c

COLD ROLLED SHAFTING

Boston (round)	3.10c
Buffalo	3.40c
Chicago	3.40c to 3.90c
Cincinnati (round)	3.25c to 3.35c
Detroit	3.50c
New York	3.35c
New York (flats, squares and hexagons)	3.85c
Philadelphia (rounds)	3.00c
San Francisco	4.65c
Seattle	4.75c
Los Angeles	5.10c
Boston flats, squares and hexagons	3.60c

Steel Pipe

Pittsburgh basing discounts, jobbers, carloads

	Black	Galvanized
Butt Weld		
⅛-inch	54½	28
¼ and ⅜-inch	60	33½
½-inch	65	50½
¾-inch	69	56½
1 to 3-inch	71	58½
Lap Weld		
2-inch	64	51½
2½ to 6-inch	68	55½
7 to 8-inch	65	51½
9 to 12-inch	64	50½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	69	56½
Lap Weld		
2-inch	62	49½
2½ to 6-inch	66	53½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	50½	33
¼ and ⅜-inch	56	38½
½-inch	62	50½
¾-inch	67	55½
1 to 1¼-inch	69	57½
2 to 3-inch	70	58½
Lap Weld		
2-inch	62	50½
2½ to 4-inch	66	54½
4½ to 6-inch	65	53½
7 to 8-inch	61	47½
9 to 12-inch	55	41½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	51	40½
¾ to 1½-inch	54	43½
2 to 2½-inch	56	45½
Lap Weld		
2-inch	50	40½
2½ to 4-inch	52	42½
4½ to 6-inch	51	41½
7 to 8-inch	47	33½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers, carloads

	Black	Galvanized
THREADS AND COUPLINGS		
Butt Weld		
⅛ and ¼-inch	31½	+22½
⅜-inch	36½	18½
½-inch	42½	27½
¾-inch	42½	27½
1 to 1½-inch	44½	29½
Lap Weld		
2-inch	39½	25½
2½ to 6-inch	42½	29½
7 to 12-inch	40½	27½
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
⅛ and ¼-inch	+ 4½	+37½
⅜-inch	35½	23½
½-inch	42½	28½
¾-inch	44½	30½
1 to 1½-inch		
Lap Weld		
2-inch	40½	27½
2½ to 4-inch	43½	31½
4½ to 6-inch	42½	30½
7 to 8-inch	35½	23½
9 to 12-inch	30½	18½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+27	+39
¾-inch	+ 7½	+19½
1-inch	+23½	+35½
1¼-inch	+ 7½	+19½
1½-inch	+ 6½	+18½
Lap Weld		
2 and 2½-inch	7½	14½
3 to 4-inch	12½	3½
4½ to 6-inch	11½	2½
8-inch	8½	

Boiler Tubes

L. C. L. discounts. C. L. 4-Point differential

STEEL	
1¾-inch	22½
2 and 2¼-inch	37
2½ to 3-inch	48
3¼ to 4-inch	53
IRON	
1½-inch	1
1¾-inch	11
2 and 2¼-inch	21
2½ to 3-inch	26
3¼ to 4½-inch	28
SEAMLESS	
1¼-inch	17
2 to 2¼-inch	30
2½ to 3-inch	38
3¼ to 5-inch	43

NEWTON SUPPLY COMPANY
Materials for Builders
NEWTON SERVICE
Philadelphia
27th & Bainbridge Sts.,
Link-Belt Company,
Nicetown,
Philadelphia, Pa.
Gentlemen:
Your representative during a recent visit requested confirmation of facts given verbally relative to operation of your Locomotive Crane.
Having operated practically all makes and types of locomotive cranes for the past sixteen years, I wanted the company by whom I am employed to purchase the best machine when they were in the market about a year ago. After inspecting many I recommended yours, on account of the features of your Clutches, Slipping Device, arrangement of Levers, accessibility of parts, and also because operators of Link-Belt Cranes spoke so enthusiastically of them.
After almost one year's service it has only been necessary to adjust one of the brakes, and the careful manner in which the Gears and Machinery are housed and arranged has made it easy to keep the Crane in a clean condition.
Your Crane is by far the fastest I have operated, and our daily performance of unloading a maximum of 300 to 350 tons of sand per hour, or an average of over 200 tons per hour including clean-up time, with a 1½ yard bucket, is a record that speaks for itself.
I have never regretted recommending your Crane, and up to the present time have not seen one of any other make that equals it.
Very truly yours,
E F Kelly
Chief Engineer.
EFK-H
NEWTON SUPPLY CO.
112.35

"THE FASTEST CRANE I HAVE OPERATED"

"YOUR crane is by far the fastest I have operated, and our daily performance of unloading a maximum of 300 to 350 tons of sand per hour, or an average of over 200 tons per hour, including clean-up time, with a 1½-yard bucket, is a record that speaks for itself."—E. F. Kelly, Chief Engineer, Newton Supply Co.

Here is another example of the unfailing performance of the Link-Belt Crane. It is another reason why it is the choice of both superintendent and operator alike.

It handles easily, quickly and stands the grind of rough, hard service. Ask any operator or owner.

Send for catalog No. 370.

916

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LINK-BELT

Composite Market Record

Monthly Averages of Fourteen Iron and Steel Products, 1913-1922, Compiled by The Iron Trade Review

1922	
April 5	$33.45
Average for March	32.97
March 29	33.36
March 22	32.80
March 15	32.87
March 8	32.86
March 1	32.81
February	32.86
January	33.35
1921	
December	33.99
November	34.71
October	35.46
September	35.34
August	35.99
July	38.14
June	41.87
May	43.32
April	43.84
March	45.37
February	48.81
January	51.98
Average for year	40.74
1920	
December	54.04
November	63.75
October	68.61
September	69.28
August	$68.93
July	68.29
June	67.89
May	68.26
April	67.49
March	65.47
February	65.63
January	59.40
Average for year	65.59
1919	
December	54.88
November	51.28
October	48.76
September	48.35
August	48.27
July	47.86
June	47.88
May	48.29
April	48.45
March	52.28
February	53.71
January	53.81
Average for year	50.32
1918	
December	57.24
November	55.67
October	57.53
September	56.56
August	56.67
July	$56.66
June	56.62
May	56.59
April	56.59
March	56.71
February	56.67
January	56.67
Average for year	56.68
1917	
December	56.68
November	58.29
October	67.75
September	83.18
August	89.69
July	89.56
June	82.66
May	73.96
April	66.48
March	61.07
February	56.76
January	55.10
Average for year	70.10
1916	
December	53.68
November	46.77
October	41.50
September	39.97
August	$39.67
July	38.37
June	39.63
May	39.78
April	39.13
March	37.18
February	35.63
January	33.66
Average for year	40.50
1915	
December	31.56
November	28.64
October	26.19
September	25.55
August	24.77
July	24.25
June	23.74
May	22.89
April	22.66
March	22.71
February	22.21
January	21.90
Average for year	24.76
1914	
December	21.58
November	23.39
October	$22.84
September	23.17
August	22.72
July	22.17
June	22.58
May	22.99
April	23.39
March	23.60
February	23.52
January	23.03
Average for year	22.92
1913	
December	23.29
November	24.02
October	24.91
September	25.55
August	25.97
July	26.34
June	26.78
May	27.34
April	27.74
March	27.93
February	28.05
January	27.96
Average for year	26.32

Iron and Steel Statistics

Tin Plate Production

Year	Tin plate Tons	Terne plate Tons	Total Tons
1908	524,448	77,090	601,538
1909	589,929	95,465	685,394
1910	725,411	84,092	809,503
1911	798,814	79,221	878,035
1912	982,830	95,698	1,078,528
1913	854,093	68,472	922,565
1914	969,892	73,098	1,042,990
1915	1,100,913	81,735	1,182,648
1916	1,276,113	107,088	1,383,201
1917	1,616,658	76,946	1,693,604
1918	1,608,124	42,689	1,650,813
1919	1,203,579	85,427	1,289,006
1920	1,539,977	69,112	1,609,089

Sheet Production

Year	Tons
1913	1,921,001
1914	1,668,644
1915	2,106,298
1916	2,492,794
1917	2,595,606
1918	2,176,537
1919	2,316,057
1920	3,133,217

Plate Production

Year	Sheared Tons	Universal Tons	Total Tons
1913	1,844,354	1,158,416	3,002,770
1914	1,346,308	766,133	2,112,441
1915	1,923,199	954,852	2,878,051
1916	2,453,150	1,224,234	3,677,384
1917	2,963,039	1,195,199	4,158,238
1918	3,885,126	1,234,782	5,119,908
1919	2,899,967	992,054	3,892,021
1920	3,505,364	1,249,769	4,755,133

Shape Production

Year	Gross tons
1908	1,083,181
1909	2,275,562
1910	2,266,890
1911	1,912,367
1912	2,846,487
1913	3,004,972
1914	2,031,124
1915	2,437,003
1916	3,029,964
1917	3,110,000
1918	2,849,969
1919	2,614,036
1920	3,306,748

Bar Production

Year	Gross Tons Iron Tons	Steel Tons	Total Tons
1908	685,233	1,301,405	1,986,638
1909	952,230	2,311,301	3,263,531
1910	1,074,163	2,711,568	3,785,731
1911	835,625	2,211,737	3,047,362
1912	944,790	2,752,324	3,697,114
1913	1,026,632	2,930,977	3,957,609
1914	563,171	1,960,460	2,523,631
1915	657,107	3,474,135	4,131,242
1916	993,948	5,236,354	6,230,302
1917	983,926	5,226,031	6,209,957
1918	846,898	5,395,851	6,242,749
1919	446,549	3,945,075	4,391,624
1920	663,032	5,467,208	6,130,240

Tube Production

Year	Iron	Steel	Total
1913	276,067	1,969,465	2,245,532
1914	212,147	1,525,557	1,737,704
1915	206,513	1,713,161	1,919,674
1916	278,117	2,372,941	2,651,058
1917	273,890	2,213,087	2,486,977
1918	202,958	2,087,521	2,290,479
1919	162,356	2,212,575	2,374,931
1920	199,673	2,803,052	3,002,725

Steel Rail Production

Year	Tons
1908	1,920,944
1909	3,023,845
1910	3,635,801
1911	2,822,556
1912	3,327,915
1913	3,502,780
1914	1,945,095
1915	2,204,203
1916	2,854,518
1917	2,944,161
1918	2,540,892
1919	2,203,843
1920	2,604,116

Freight Rates

Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.96
Newark, N. J.	6.72
Boston	7.28
Philadelphia	6.32
Pittsburgh	1.96
Chicago	5.32
St Louis	6.44
Minneapolis, St. Paul	7.60
Buffalo to:	
Albany, N. Y.	$2.52
New England (rail)	5.46
New York and Brooklyn (rail)	5.46
Virginia furnaces to:	
Philadelphia	$5.74
New England	6.58
Brooklyn, Jersey City, Newark	6.16
Birmingham, Ala., to:	
Boston	$10.665
Boston (rail and water)	7.65
Cincinnati	4.50
Chicago	6.66
Cleveland	6.66
Louisville, Ky.	4.12
Minneapolis, St. Paul	9.73
New York	10.265
Philadelphia	8.665
Pittsburgh	7.60
Savannah, Ga.	4.25
St. Louis	5.725
Chicago to:	
Des Moines	$4.725
Minneapolis, St. Paul	3.375
Milwaukee	0.89
Moline, Ill.	1.89
Omaha	6.07
St. Louis	2.80
Ironton and Jackson, O., to:	
Chicago	$5.32
Cincinnati	2.52
Cleveland	3.36
Detroit	3.64
Indianapolis	3.22
Minneapolis, St. Paul	8.40

Finished Material

Pittsburgh, carloads, per 100 pounds, to:	
New York	$0.38
Philadelphia	0.36
Paltimore	0.35
Boston	0.405
Buffalo	0.295
Baltimore	0.35
Cleveland	0.24
Cincinnati	0.32
Chicago	0.38
Detroit	0.32
Minneapolis and St. Paul	0.66
Kansas City	0.815
Denver	1.32
St. Louis	0.475
New Orleans	0.515
Birmingham	0.765
Pacific coast (all rail)	1.665
Pacific coast (tin plate)	1.665

Enthusiastic Nation-wide
Executive Appreciation

Each week the status and trend of trade is depicted by a series of authoritative charts in the Trend of Business Section of THE IRON TRADE REVIEW. These charts are prepared by a trained staff from statistics compiled from numerous reliable sources. This new and exclusive feature marks a great advance in business paper service.....but let our readers tell our story:

"I certainly do hope you continue the Trend of Business graphic charts in The Iron Trade Review. They give at a glance most valuable information that would require weeks of statistical reading to find. Such things as this are what make the paper distinctive and valuable to its readers." *Dean Brothers, Indianapolis, Stuart Dean.*

"I want to compliment you on the extremely succinc. and effective form in which the principal features bearing on the general business situation are set forth." *Link-Belt Company, Chicago, Charles Piez, President.*

"May we compliment you on the new chart section. These charts are indeed a great help to anyone who desires to keep abreast of the times. In our opinion the adoption of this new feature places The Iron Trade Review ahead of any other paper catering to the steel industry." *The Griscom-Russell Co., Massillon, O., J. A. O'Neill, Purchasing Agent.*

"We were most glad to see the new feature—'The Trend of Business'—in The Iron Trade Review issue of Feb. 9." *Oxweld Acetylene Co., Newark, N. J., J. F. Bruestle, Works Purchasing Agent.*

"I wish to compliment you upon your new Trend of Business Section." *The New York Trust Co., New York, R. C. Craig, Industrial Department.*

"You have made a useful addition to your magazine which deserves well of your readers." *Stanley Works, New Britain, Conn., E. A. Moore, President.*

"We cannot put away the Feb. 23 issue of The Iron Trade Review without first expressing our appreciation of the Business Trend Section. This is interesting; hope you will continue furnishing this Section from week to week." *Oliver Machinery Co., Grand Rapids, Mich., R. F. Baldwin, Treasurer.*

THE IRON TRADE REVIEW

A Penton Publication *Established 1883*

The international authority of the world's iron, steel and metal-working industries

Cleveland, U.S.A.

A. B. C. A. B. P.

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$10.50 to 11.00
Boston (dealers)	9.00 to 9.25
Buffalo	15.00
Chicago	13.25 to 13.75
Cincinnati	10.00 to 10.50
Cleveland	14.00 to 14.25
Detroit (dealers)	10.50 to 11.00
Eastern Pennsylvania	13.50 to 14.50
New York (dealers)	9.50 to 10.50
Pittsburgh	16.50 to 17.00
San Francisco	9.00 to 10.00
St. Louis	13.50 to 14.00
Valleys	16.25 to 16.50

BUNDLED SHEETS

Buffalo	$10.00 to 11.00
Cleveland (hydraulic)	11.50 to 11.75
Cincinnati	5.50 to 6.00
Eastern Pennsylvania	11.00 to 12.00
Pittsburgh	13.50 to 14.00
St. Louis	5.00 to 5.50
Valleys (hydraulic)	13.50 to 14.00

STEEL RAILS, SHORT

Birmingham	$11.00 to 12.00
Boston (dealers)	9.00 to 10.00
Chicago	14.25 to 14.75
Cincinnati	11.00 to 11.50
Cleveland	13.25 to 13.50
St. Louis	15.00 to 15.50

STOVE PLATE

Birmingham	$12.50 to 13.00
Boston	11.50 to 12.00
Buffalo	14.00 to 15.00
Chicago	15.25 to 15.75
Cincinnati (net)	9.50 to 10.00
Cleveland	13.50 to 13.75
Detroit	9.50 to 10.00
Eastern Pennsylvania	14.00 to 14.50
New York	10.00 to 10.50
Pittsburgh	12.50 to 13.00
St. Louis	14.50 to 15.00

LOW PHOSPHORUS

Buffalo	$16.50 to 17.50
Cincinnati	16.50 to 17.00
Eastern Pennsylvania	16.50 to 17.00
Pitts. billet and bloom crops	18.00 to 18.50

SHOVELING STEEL

Chicago	12.75 to 13.25
Pittsburgh	12.50 to 13.00
St. Louis	13.00 to 13.50

KNUCKLES, COUPLERS & SPRINGS

Chicago	15.00 to 15.50
Eastern Pennsylvania	15.50 to 16.50
Pittsburgh	17.00 to 17.50
St. Louis	15.50 to 16.00

COMPRESSED SHEETS

Buffalo	$13.00 to 14.00
Chicago	9.50 to 10.00
Pittsburgh	14.50 to 15.00

FROGS, SWITCHES, GUARDS

Chicago	13.25 to 13.75
Eastern Pennsylvania	13.50 to 14.50
St. Louis	14.50 to 15.00

BOILER PLATE, CUT

Detroit (dealers)	$7.00
St. Louis (dealers)	8.50 to 9.00

ANGLE BARS—STEEL

Chicago	14.00 to 14.25
St. Louis	14.00 to 14.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham, No. 1	$10.00 to 11.00
Boston (dealers)	11.00 to 12.00
Buffalo	15.00 to 16.00
Chicago, No. 1	13.00 to 13.50
Chicago, No. 2	13.50 to 13.75
Cincinnati, No. 1	10.00 to 10.50
Cleveland, No. 1	12.00 to 12.25
Eastern Pennsylvania, No. 1	15.50 to 16.00
Pittsburgh, No. 1	14.00 to 14.50
Pittsburgh, No. 2	16.50 to 17.00
New York, No. 1 (dealers)	12.50 to 13.00
St. Louis, No. 1	13.50 to 14.00
St. Louis, No. 2	13.00 to 13.50

WROUGHT PIPE

Boston (dealers)	$7.50 to 8.00
Buffalo	10.00 to 10.50
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	8.25 to 8.75

YARD WROUGHT

Boston	$8.00 to 9.00
Eastern Pennsylvania, No. 1	13.50 to 14.00

CITY WROUGHT

New York, long	$10.25 to 10.75

BUSHELING

Buffalo, No. 1	$12.00 to 13.00
Chicago, No. 1	11.50 to 12.00
Chicago, No. 2	7.50 to 8.00
Cincinnati, No. 1	8.50 to 9.00
Cleveland, No. 1	10.50 to 11.00
Cleveland, No. 2	9.00 to 9.50
Eastern Pennsylvania, No. 1	13.00 to 13.50
Pittsburgh, No. 1	12.00 to 12.50
St. Louis, No. 1	12.00 to 12.50

MACHINE SHOP TURNINGS

Birmingham	$6.00 to 6.50
Boston (dealers)	5.50 to 6.00
Buffalo	9.50 to 10.00
Chicago	6.75 to 7.25
Cincinnati	4.50 to 5.00
Cleveland	10.75 to 11.25
Detroit (dealers)	6.00
Eastern Pennsylvania	11.50 to 12.50
New York (dealers)	6.00 to 6.50
Pittsburgh	12.00 to 12.50
St. Louis	8.00 to 8.50
Valleys	11.00 to 11.25

CAST IRON BORINGS

Birmingham (chemical)	$13.40 to 14.00
Birmingham, borings (plain)	6.00 to 6.50
Boston (chemical)	9.50 to 10.00
Boston (dealers)	7.50 to 8.50
Buffalo	10.50 to 11.50
Chicago	9.00 to 9.50
Cincinnati	4.50 to 5.00
Cleveland	10.75 to 11.25
Detroit (dealers)	7.50
Eastern Pennsylvania	12.00 to 12.50
Eastern Pennsylvania (chemical)	15.00 to 16.00
Pittsburgh	12.50 to 13.00
New York (dealers' price)	7.00 to 7.50
St. Louis	8.50 to 9.00
Valleys	12.00 to 12.25

MIXED BORINGS AND TURNINGS

(For blast furnace use)

Boston (dealers)	$5.50 to 6.00
Cleveland	9.00 to 9.25
Eastern Pennsylvania	11.00 to 11.50
New York (dealers)	6.00 to 6.50

IRON AXLES

Birmingham	$15.00 to 16.00
Buffalo	23.00
Chicago	23.00 to 23.50
Cincinnati	17.50 to 18.00
Detroit	19.00
Eastern Pennsylvania	25.00 to 26.00
New York (dealers)	20.00 to 21.50
Pittsburgh	24.00 to 25.00
St. Louis	24.00 to 24.50

IRON RAILS

Buffalo	$16.00 to 17.00
Chicago	17.00 to 17.50
Cincinnati	11.50 to 12.50
Cleveland	14.00 to 14.50
St. Louis	16.00 to 16.50

PIPES AND FLUES

Chicago	$9.25 to 9.75
Cincinnati	5.00 to 6.00
Cleveland	11.00 to 11.50
Detroit	7.00
St. Louis	8.50 to 9.00

RAILROAD GRATE BARS

Buffalo	$13.00 to 13.50
Chicago	13.00 to 13.50
Cleveland	13.50 to 13.75
Detroit	8.00 to 9.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	10.00 to 10.50
St. Louis	15.50 to 16.00

FORGE FLASHINGS

Boston (dealers)	$5.00 to 5.25
Chicago, small	9.00 to 9.50
Cleveland, small	11.00 to 11.50
Cleveland, large	10.75 to 11.00
Detroit (dealers)	7.50

FORGE SCRAP

Boston	$4.50 to 5.00
Chicago	13.00 to 13.50
Eastern Pennsylvania, No. 1	11.00 to 11.50

ARCH BARS AND TRANSOMS

Chicago	18.50 to 19.00
St. Louis	20.00 to 20.50

ANGLE BARS—IRON

Chicago	$17.50 to 18.00
St. Louis	16.50 to 17.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	$5.50 to 6.00
Buffalo	12.00 to 12.50
Chicago	9.50 to 10.00
Cleveland	11.75 to 12.00
Detroit	8.00 to 8.50
Eastern Pennsylvania	11.50 to 12.00
Pittsburgh	13.50 to 14.00
St. Louis	9.00 to 9.50

STEEL CAR AXLES

Birmingham	$15.00 to 15.50
Boston (dealers)	11.00 to 11.50
Buffalo	20.00 to 21.00
Chicago	15.50 to 16.00
Cleveland	17.00 to 17.25
Eastern Pennsylvania	17.00 to 18.00
New York (dealers)	11.00 to 11.50
Pittsburgh	16.00 to 16.50
St. Louis	17.50 to 18.00

SHAFTING

Boston (dealers)	$14.00 to 14.50
Chicago	17.50 to 18.00
Eastern Pennsylvania	19.50 to 20.00
New York (dealers)	12.50 to 13.00
St. Louis	16.50 to 17.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$13.00 to 14.00
Birmingham, tram car	12.50 to 13.00
Boston (consumers)	14.00 to 15.00
Buffalo, iron	15.50 to 16.50
Chicago, iron	18.00 to 18.25
Cincinnati	12.50 to 13.00
Cleveland, iron	13.00 to 13.50
Detroit	12.50
Eastern Pennsylvania, iron	15.00 to 15.50
New York, iron (dealers)	14.00 to 15.00
Pittsburgh, iron	16.00 to 16.50
Pittsburgh, steel	17.00 to 17.50
St. Louis, iron	16.00 to 16.50

NO. 1 CAST SCRAP

Birmingham, cupola	$13.00 to 14.00
Boston (consumers)	17.50 to 18.00
Buffalo	17.00 to 18.00
Chicago, cupola	15.75 to 16.25
Cincinnati, No. 1, machinery, cupola (net)	13.50 to 14.00
Cleveland, cupola	15.50 to 16.25
Eastern Pennsylvania, cupola	17.25 to 17.75
New York, cupola (dealers)	13.50 to 14.00
Pittsburgh, cupola	17.00 to 17.50
San Francisco	23.00 to 24.00
St. Louis, agricultural	18.25 to 18.75
St. Louis, railroad	17.75 to 18.25
Valleys	16.50 to 17.00
Detroit, machinery (net)	13.50 to 14.00

HEAVY CAST

Boston (consumers)	$13.50 to 14.00
Buffalo	14.00 to 14.50
Cleveland	12.50 to 13.25
Eastern Pennsylvania	15.00 to 15.50
New York (dealers)	13.00 to 13.50
Pittsburgh	16.00 to 16.50
Detroit, automobile (net)	16.50 to 17.00

MALLEABLE

Boston, railroad	$12.50 to 13.00
Buffalo	13.00 to 14.00
Chicago, railroad	15.25 to 15.50
Chicago, agricultural	15.25 to 15.50
Cincinnati, agricultural	9.00 to 9.50
Cincinnati, railroad	9.00 to 9.50
Cleveland, agricultural	12.50 to 13.00
Cleveland, railroad	14.75 to 15.00
Detroit	10.00
Eastern Pennsylvania, railroad	13.00 to 14.00
Pittsburgh, railroad	14.00 to 14.50
Pittsburgh, agricultural	12.50 to 13.00
St. Louis, agricultural	12.50 to 13.00
St. Louis, railroad	13.00 to 13.50

Miscellaneous Scrap

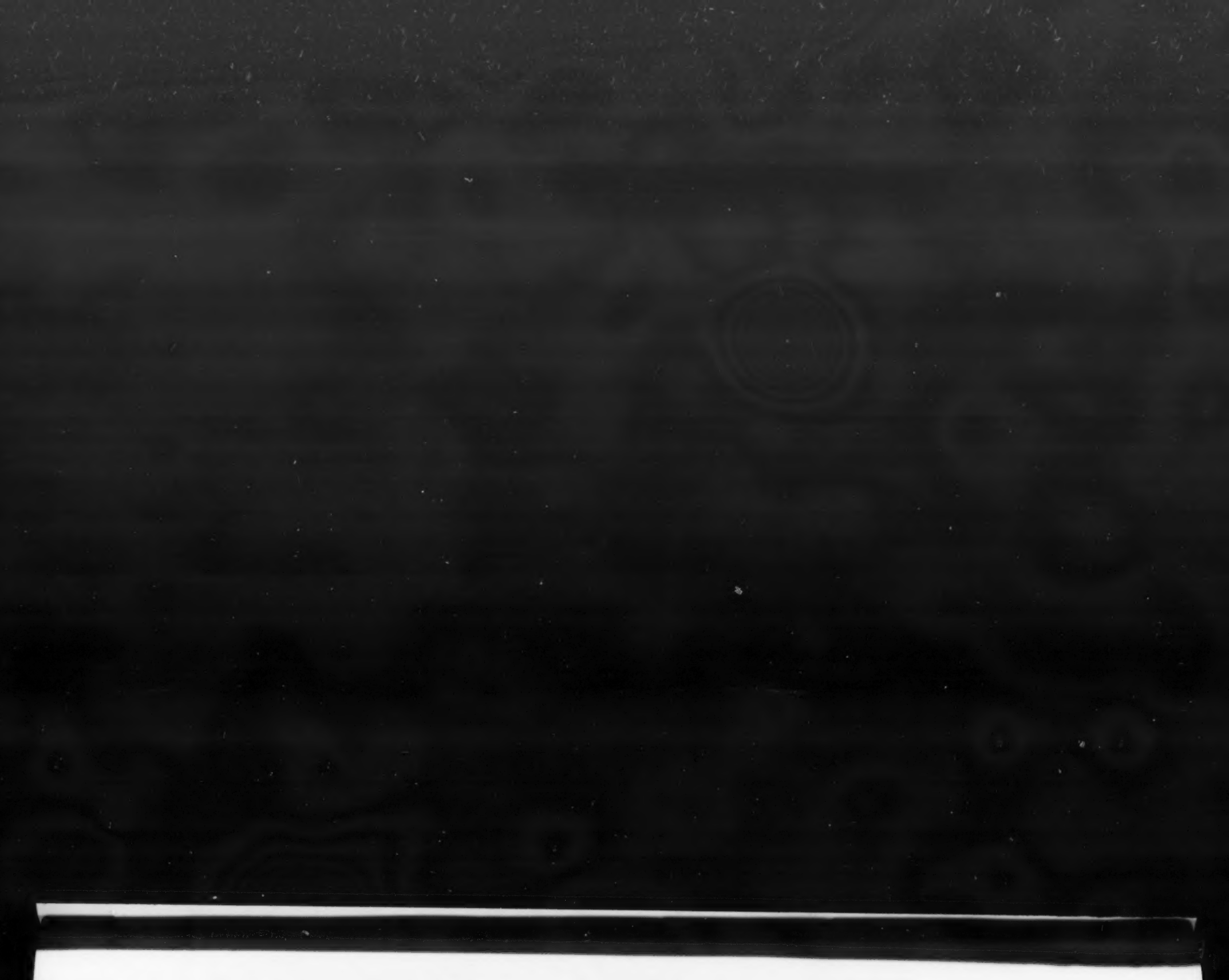
REROLLING RAILS

5 feet and over

Birmingham	$14.00 to 14.50
Boston (dealers)	10.00 to 10.50
Chicago	14.00 to 14.50
Cleveland	17.00 to 18.00
Detroit (dealers)	9.00 to 9.50
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	13.50 to 14.50
Pittsburgh district	16.50 to 17.00
St. Louis	15.50 to 16.00

LOCOMOTIVE TIRES

Chicago	12.50 to 13.00
St. Louis	11.50 to 12.00

LOW PHOSPHORUS PUNCHINGS

Chicago	14.00 to 14.50
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	17.00 to 17.50